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HARVARD BUSINESS REVIEW

OCTOBER
1931

VOLUME X
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DEFLATING INDEMNITY HOPES AND WAR DEBTS[1]

By J. FRANKLIN EBERSOLE

THE problem of reparation, in so far as the American people may be able to influence the solution, probably will not be settled finally until we are able to return somewhat nearer to our prewar state of feeling toward the prominent European nations. Although half a generation has passed since the World War began, we are hardly more than halfway back to our prewar attitude toward Germany. It continues to be somewhat difficult to recall our admiration for the German people as a race and as a nation. Very few now remember that Theodore Roosevelt joined with the Kaiser in a review of a portion of the German army and favored the building of a powerful American navy at a time when such action could be construed only as a threat to England's acknowledged sea power. Many more may remember the clubs, athletic organizations, and places of public hospitality operated by healthy, thrifty, and industrious Germans, and the popularity accorded by imitation to the methods of scholarship and of governmental control of industry as developed in Germany.

Most of these activities and ideas were gradually swept away as the War proceeded, and, finally, when we went into the War, we developed a strong dislike for all things German. The dislike being strong enough, the War was won.

When the Armistice came, a new state of feeling, entirely different from that which had prevailed before the War, emerged. The emotional strain of prosecuting the War had destroyed our capacity for making well-balanced judgments regarding European affairs. We all agreed then that Germany was to be blamed for everything, had all the war guilt, and should be made to pay. In fact, we agreed that she should be properly punished for having perpetrated the War. There was no

[1] Address delivered at the first annual Special Program for Alumni, held at the Harvard Graduate School of Business Administration, July 24 and 25, 1931.

sum too large in anyone's imagination for Germany to be made to pay, and one of the major difficulties, in negotiating the treaty of peace, was to agree upon the sum.

The reparation controversy, in all its history, has been and probably will continue to be merely a series of agreements, each one of which momentarily offers enough inducements, to both sides, to make such agreement sufficiently palatable for home consumption to obtain the necessary legislative approval. The fundamental problem of reparation has not been, as has so often been said, to determine and readjust the *amount* to be paid, but, on the contrary, it has been to readjust the ideas, the feelings, and the expectations of the parties to the agreements. The basic problem, therefore, is not economic, however much we may clothe the negotiations and agreements in such terms, but largely psychological and political. How much time must elapse before an effective majority in America will recognize this fact is an interesting speculation.

The political character of the reparation problem and of each of the attempted solutions becomes increasingly apparent as the several agreements are reviewed. Germany agreed, by the terms of the Armistice, to compensate for all damage done to the civilian population of the Allies and their property by the aggression of Germany. The Treaty of Versailles provided that damages include pensions, thereby increasing the total bill in the ratio of about one to three. This was done to please certain of the Allies who otherwise would not share in the payments. The fixing of a definite sum, however, was not completed by the Treaty, but was delegated to the Reparation Commission.

The report of this Commission was considered at a conference in London, and an agreement, based thereupon, was announced in May, 1921, fixing the total *finally* at 132 billion gold marks and establishing a schedule, known as the London Schedule, requiring annual payments of 2 billion gold marks, plus a 26% tax on all German exports. This settlement, although not meeting the extravagant hopes of the most outspoken of the victors, appeared to provide sufficient burden to tax all Germany's recuperative powers, and gave an assurance of freedom from fears of future German aggression. The state of contemporary feeling was such that little, if any, thought was given to the prospective ability of Germany to pay, and, more important, to the need for a "will to pay" based upon acquiescence coupled with some hope of fulfillment.

It was inevitable that Germany could not and would not meet the payments. Insufficient weight had been given to the several prosperous agricultural and industrial areas taken from Germany by the Treaty and to the German losses of commercial shipping and of foreign investments. It has been estimated that German shipping and foreign investments produced more than one and one-half billion gold marks of invisible exports per annum just prior to the War.[2] Even if there had been an immediate restoration of Germany's prewar area and economic strength, only half of the burden imposed by the London Schedule could conceivably have been met without borrowing and continuous refunding. With the reduction in area, in investments abroad, and in shipping, even one billion gold marks could not have

[2] Moulton and McGuire, *Germany's Capacity to Pay*, p. 31.

been paid annually through exports without borrowing. For a time Germany made the required payments, because about ten billion gold marks of foreign exchange were created unexpectedly during the years 1919 to 1922 by exports of depreciating paper marks and mark securities to meet the demands of foreign speculators including those within the United States.

The hopelessness of the situation for Germany was brought home to everyone by her failure to balance the budget except by successive issues of paper marks. Reparation payments were defaulted and the policy of "passive resistance" followed. France was in no mood for compromise, and, with Belgian cooperation, invaded and occupied the Ruhr in January, 1923. The final collapse of the mark in August, 1923, hastened the appointment of experts, by the Reparation Commission in November, to review the whole question. As a result, the Dawes Plan was developed. The collapse of the franc and the financial crisis in France in March, 1924, provided a welcome for the Dawes Plan when it was announced on April 9, 1924. The spectre of national bankruptcy made the Plan an acceptable alternative to France, and the prospect of ending the French occupation of the Ruhr made the Plan acceptable to powerful industrialists in Germany.

The Dawes Plan, however, temporized further with the divergent hopes of the parties to the settlement. Undoubtedly this was necessary. The number of annuities and, therefore, the total sum to be paid, was not fixed. This enabled the French populace to approve without sacrificing their hopes for a large sum. Germany was accorded the "transfer provisions," constituting somewhat more than a hope that the annual payments would sooner or later be reduced. Germany was also led to believe that the occurrence of some propitious event would make it possible to have a limitation placed on the number of annuities if, with the best of intentions to pay, the Plan should prove to be unworkable. These hopes for a reduction were not sufficient to obtain popular approval in Germany. It was necessary for Chancellor Marx to issue a proclamation, repudiating Germany's previous admission of responsibility for the War, in order to obtain the necessary votes in the Reichstag.

There was an approach to reason in the terms of the Dawes Plan, and Germany came out of the negotiations with a will to pay. The Plan provided essentially a form of receivership for Germany somewhat akin to our evolved procedure for handling corporations in default and for allocating their prospective future net income among those having made old, and those making new, advances of capital. The annuities to be paid began with one billion gold marks required for the year 1924–1925, then increased to about one and one-quarter billions each in the years 1925–1927, to one and three-quarters billions in 1927–1928, to two and one-half billions in 1928–1929, and were fixed at two and one-half billions for each year thereafter, subject to adjustment according to an index of prosperity, to price changes, and to difficulties met in making transfers of payments abroad. Provision was made substantially for a moratorium during the first year, as eight-tenths of the annuity for that year was financed by an external bond issue, the German Republic 7's of 1949.

In 1924 it was obvious to any thoughtful person that the Plan would

have its real test in 1927–1928, and probably would not endure throughout the year 1928–1929. The unparalleled prosperity prevailing in these years, and the willingness of American investors to purchase huge quantities of new foreign issues, however, postponed the pinch until one annuity had been paid at the top level of two and one-half billion gold marks!

Viewed solely from the standpoint of Germany, the Plan had some disagreeable as well as favorable features. A disagreeable feature, probably overemphasized in German thought, was the elaborate system for supervising collections from mortgages on German railways and industries and certain taxes specifically pledged. A desirable feature of the Plan, underemphasized in German thinking, was the provision for automatically adjusting the payments directly with price changes.

The transfer clauses of the Plan provided for deferring and later canceling reparation payments when and if and so far as they might threaten the maintenance of the gold standard in Germany. The transfer clauses were a happy invention. They made it possible for Germany to hope for a cessation of reparations in large part and for France to hope for the utmost that Germany could pay. They were also a concession to the economic dogmatism of the day. The accepted theory that in the long run exports and imports must be balanced exclusively in goods or in gold was thus easily met. Later events showed that too little weight had been given, in applying the theory in the Plan, to the fact, always of current importance in foreign exchange, that exports of securities or rights and claims to property could be used to balance foreign trade and could be continued indefinitely as long as outside investment markets could and would purchase such securities in accelerating amounts. To the extent that, subsequently, such securities should be repudiated, or readjusted by corporate reorganizations, or turned into ownerships of depreciated land and property through foreclosure processes and taxation, or suffer from depreciation of the monetary standard, or be refunded, the balancing would be permanent, without a movement of gold or of goods.

Even Germany must have been astonished at her ability to borrow ample funds, chiefly because of the indiscriminate marketing and buying of foreign issues of all kinds in the United States. And France, collecting, although indirectly, and retaining, in large part, the proceeds of the securities sold in America for a number of prosperous years, was able to stabilize her currency, build up extraordinary gold reserves, finance desirable "alliances," and, finally, assume an attitude of dominance in European military and financial affairs.

Under the pressure of the exaggerated desire to be free from the annoyance of foreign supervision and the difficulty in making the payments for the top-level year 1928–1929, Germany proceeded to negotiate for another *final* settlement, which eventuated in what is known as the Young Plan, announced on June 8, 1929, about four months before the great stock-market break in the United States. It may be that France, as well as Germany, was imbued, during these negotiations, with the same delusions regarding the permanence of the "New Era" as prevailed during the same year in the United States!

The contingent payments to be collected under allied supervisory machin-

ery for an uncertain number of years, as provided by the Dawes Plan, were converted, by the Young Plan, into somewhat smaller but definite amounts to be paid in stated years, and not subject to reduction or allied supervision. Although portions of each of the new annuities were unsecured and postponable, none were cancelable. The Young Plan was acceptable to Germany as a means of attaining freedom from internal foreign supervision, and to France as a means for the more rapid strengthening of her finances by a quick realization of cash from the capitalization and sale, in the form of bonds, of the "nonpostponable" portions of the annuities. The first and only sale of such bonds was that of the German Government 5½'s of 1965.

The Young Plan, in brief, provided for a series of annuities beginning with nearly one and three-quarters billion gold marks for the year 1930–1931, rising to a peak of two and one-half billions in 1965–1966, and diminishing thereafter to a final payment of less than one billion in 1987–1988. The average annuity to be paid during the first 37 years, including the charge for interest and sinking fund on the Dawes Plan external bonds, was slightly over two billion marks. On the face of these figures, it is clear that the annuity payments of the Young Plan were no more favorable to Germany than were the terms of the Dawes Plan, with an adjustment for price changes, should there eventuate a decline of merely 20% in commodity prices.

In view of the recent world-wide slump in commodity prices, greatly exceeding 20%, it appears that the receivership of Germany was unfortunately terminated by the issuance of a quantity of "fixed-charge securities" entailing a heavier annual burden than that payable with the contingent or "common-stock securities" outstanding under the Dawes Plan. Following the parallel of corporate reorganization experience, a further adjustment of the obligations, a reduction of the "fixed charges," and the issuance of some contingent or "income" rights are now needed. However, there must be a drastic scaling down of the total of fixed charges and income rights in any new plan. Germany never has paid and, at present price levels, never can pay the present fixed charges except by refunding through the sale of long-term securities or by borrowing on short-term current account in the American or other investment markets. A continuation of such refundings or borrowings on a large scale is no longer feasible.

The annuities paid under the Dawes and Young Plans were met wholly by the indirect method of borrowing abroad. In fact, it is believed that Germany borrowed, on government and private account combined, about two dollars for every dollar paid on reparation account under these Plans. When the investment demand of the American market for long-term foreign issues subsided, American bankers maintained the volume for a time by taking short-term foreign credits. The unwillingness of the American investment market and of American banks to make additional advances has precipitated the whole question, and at least one more, if not two, *final* agreements may be necessary before the problem of reparation is solved. The moratorium year should be a year of negotiation, and the solution, although clothed in economic terms again, will doubtless be a political one.

The political problem, however, has broadened. It will be necessary this

time to provide some inducement for popular approval by American voters. To sacrifice our portion of the annuities, although we do not effect the collection thereof directly, and to assume a larger or longer burden of Federal taxation, may require some concessions by Europe as to armaments. Such concessions, even if more apparent than real, would in all probability assure the enthusiastic support of the American public for any reasonable new plan.

The political problem to be faced now is, also, much deeper than in the settlements heretofore made. We are faced with the need to estimate the nearness of the "flash point" in Germany's political and social organization. The maintenance of law and order and of the capitalistic basis of the German state is of greater importance to France, England, and the United States than "full" reparation. Whether or no Germany has overemphasized, and France has underemphasized, the imminent danger of Hitlerism or of some form of communism, may be a moot question. Time alone will determine. Suffice it to say that Germany, on general balance, has not met the reparation payments from taxation, and that France probably has been and is equally unwilling or unable to assume the tax burden of writing off the war costs. The basic problem is to determine and allocate, respectively, the tax burdens which Germany and France can assume without serious social or political disorder. The taxation contributions of England and the United States to the new settlement will be much easier to arrange. The large number of sizable fortunes and incomes in the latter two countries does not make taxation quite so unpopular. The greater relative burden of income and estate taxes in Europe should make American participation in downward revision of the annuities much easier to obtain.

The participation of the United States directly, indirectly, or impliedly, in any future settlement will be colored by a change of feeling which has been developing in the United States regarding the prominent European nations. The lapse of time has improved perspective. The better-balanced view of Europe's needs may have been due, in part, to the Pershing memoirs. There is a growing suspicion that the fear of aggression by Germany has been somewhat misplaced. There is some doubt as to the desirability of continuing a policy which has built up, and which will continue to build up, a financial and military power, in the control of France, moving in a direction and developing an atmosphere of overconfidence closely similar to that existing in Germany prior to the World War. The determination not to see France crushed and ruined by Germany during that War may now have turned into a desire not to see Germany or England destroyed by France. Such a change of feeling is a natural reaction against an undesirable aggrandizement of power by any nation. It is not without precedent.

For 200 years, more or less, prior to the World War, European thought and political policy favored a "balance of power." The belief that a balance of power among the nations contributed to peace and freedom accounts for its existence and survival. It accounts for the defeat of Napoleon in his campaign to dominate Europe, and for the more recent defeat of Germany in her attempt to obtain a similar position. The unwillingness of England to see France dismembered by Prussia after the close of the Napoleonic

Wars is paralleled by the existence today of a strong desire on our part that Germany and England be sustained as independent nations.

Although we may not be aware of the fact now, it is probably true that the people of the United States have launched upon a century policy of contributing to a balance of power in Europe. Although we may hold aloof from alliances and from a league of nations, we shall not be blind to the development of events in Europe. We are "in" Europe, and shall continue to be as long as we hold foreign investments and are interested in developing our exports and imports. For a long time, probably, we shall not favor any country seeking the military domination of Europe or of the world.

Our sympathies have not been and are not particular. We are no more interested in the Prussianizing of France than we are in the Napoleonizing of Germany.

RAILROAD UNIFICATION IN NEW ENGLAND IN RELATION TO THE FOUR-PARTY PLAN[1]

By WINTHROP M. DANIELS

EVEN though the prophetic mantle to disclose "the future and the viewless things" concerning the future of railroads of the United States has not been bestowed upon the writer, a study in the narrower field of the immediate prospect of the railroad future as affected by combinations of one kind or another, and particularly in the way in which these combinations may affect the set-up of railroads in New England, is particularly timely.

The Transportation Act of 1920

The Transportation Act of 1920, which provided or sought to provide for the consolidation of railroads, has been in operation for ten years or more, and we are still far away from consolidation. That Act, so far as it contemplated railroad consolidation, was a mixture of enlightened policy and bungling provisions to effectuate the end or result which it had in view. It recognized the advantages of a limited number of railroad systems. It recognized the absurdity of maintaining something like 1,000 operating properties, each with its own executive staff, some operating a mileage of three, four, or five miles. Its sponsors exaggerated grotesquely the economies to be derived from consolidation. The four consolidated British systems have shown that the economies are exceedingly meager, and the same thing is likely to prove the case here. While in absolute amount they are substantial, they are not likely to lead, as was anticipated, to any great reduction of the rates and charges imposed on the railroads' patrons.

This Act of 1920 prudently sought in the consolidation of railroads to avoid disturbances of the established channels of traffic. It sought to assure intercompetition between those systems. It provided also that with reference to system size and rate of return, the consolidated systems should be so constructed as to afford on competitive traffic identical rates and virtually the same percentage of return. It imposed on the consolidations which it contemplated the burden of support of the crippled roads which happened to connect with the larger and more solvent lines, and it imposed upon the Commission the impossible task of drawing up a picture in advance, as to what particular consolidations should be effected.

Its crowning error, it seems to me, was its erecting a number of hurdles to the realization of consolidation which the Act contemplated. Consolidation proper implies that the new consolidated system shall be the sole owner, the sole manager, the sole operator of the system in question. Whether that is brought about by an enlargement of one of the existing corporations or by the creation of a new corporation, is a matter of comparative indifference. The essential point is that consolidation proper involves the disappearance of the preexisting corporations and their merger and the transfer of their property, title thereto vesting in the com-

[1] Address delivered at the first annual Special Program for Alumni, held at the Harvard Graduate School of Business Administration, July 24 and 25, 1931.

pany which stands out as the product of the proposed consolidation.

The Plan of Consolidation

This Act, wise in its policy, was singularly unhappy in the measures it proposed to realize this particular ideal. It required, in the first place, that those proposing consolidation should conform to the program or plan which the Commission had been ordered to draft. It required, in the second place, that the securities of the new consolidated company at par should not exceed the value of the various individual properties that were thereafter to be merged into the consolidated system, and that the values of these properties should be the values ascertained under the valuation act. It was hardly realized how difficult and protracted the process of valuation would be. Furthermore, any of the valuations of the larger lines looks down a long vista of litigation if the figure found by the Commission as the true value is to be used in any way to affect the income of the property whose valuation has been so fixed. As a matter of fact, most systems have protested the valuations fixed by the Commission, and the final outcome of these valuations lies far in the future. But only under these conditions was consolidation made possible.

The crowning error of the Act was its provision as an alternative to the thorough-going consolidation which the Act contemplated, a fairly easy method of effecting the unification of lines without taking the hurdles which the Act requires in order to permit consolidation proper. Section 5 of the Act, which outlines the measures to be taken to effect consolidation, also provides that a carrier may acquire the control of another carrier or carriers by leasing the lines, by purchasing control of the stock, or in any other fashion not involving consolidation into a single company for ownership and operation. This simpler and quicker method of unifying railroads is the method which, up to date, has been practically uniformly followed in the various amalgamations that have been made up to this time. It carries the same immunity to the anti-trust laws as does consolidation proper. The fact that consolidation was made difficult and unification by stock control was made comparatively easy always strikes me as one of the Act's astounding fallacies. I sometimes think it is very much as if some Solon, in drawing up a code, had inadvertently made what is called companionate marriage very easy and simple, and the old brand of marriage a very difficult process. At all events, the process, up to the present time, has been practically inoperative, although some 50,000 miles of line have been affected by other railroads' securing unified control by lease or stock ownership.

Originally, Professor Ripley, of Harvard, was employed by the Commission to make a study of a reasonable system of consolidations, and this plan was embodied in what is termed the tentative report. For something like two years, over all parts of the country hearings were heard with reference to the proposed plan, and anybody who had any objections was heard. The hearings closed in December, 1923, three years after the passage of the original act. For several years the Commission stalled in discharging its duty of presenting a final plan for railroad consolidation. In its annual reports, it urged that it be exempted from the task of drawing up a final plan, and when Congress showed no disposition to remove the task unwisely

imposed, the Commission put out its final plan of consolidation, a plan which contains such elements as made only too evident the insuperable difficulty which the plan involved. It reminds me of the father who, upon approaching his youngster who was busy drawing a cartoon, inquired what the picture was supposed to be. "Oh, that is God," replied the youngster. And when he was told that nobody knew what God looked like, he replied—"They will after I have finished my picture."

This was the impossible task which the Commission so long dodged, and when it put out a plan, some of its details were seemingly intended to create mirth rather than a real basis for actual consolidation. It is true that the law permits the Commission to remodel its plan, and this saving clause makes possible some alterations in the plan that now stands out as the final plan for railroad consolidation. But if Congress, when it enacted the Act, had made the question of railroad consolidation one to be entered into voluntarily by the carriers, and then approved or disapproved by the Commission, we should be much further advanced in the realization of the objective at which this particular section of the Act aims.

The Four-system Plan

Early in this year the announcement came from the White House that the four leading trunk-line systems had finally agreed as to the desirability of apportioning lines in official classification of territory west of the Hudson River; and the tone of its announcement was somewhat optimistic, suggesting the possibility of a speedy realization of this four-system plan, and even going so far as to suggest an eventual reduction of rates when the consolidations were once realized. The New York Central, the Pennsylvania, the Baltimore & Ohio, and the Nickel Plate-Chesapeake & Ohio had apparently agreed in principle as to the distribution of the major lines in official classification of territory outside New England, and while that plan has not definitely been laid before the Commission, and while some of its details are apparently still subject to arbitration, in a general way the public has been apprised as to what these new systems are each to comprise.

I shall not tax your patience by attempting to recite the way in which the agreement between the four main trunk lines parceled out the other railroad properties east of the Hudson and north of the Ohio and Potomac Rivers in official classification territory. But it may be asserted that, in the first place, in all human probability it is not a literal consolidation at all, and is nothing more or less than a project for unified control through either leases, stock ownership, or the granting of trackage rights over other system lines. It is only remotely possible that the plan should be a consolidation in the literal sense of the term as explained above.

In the second place, this agreement between the four trunk lines cuts squarely across the plan which has been promulgated as the Commission's final plan for the consolidation of railroads. The Commission has power to alter its plan, and it is conceivable that it might junk its own five-system plan and adopt something like the proposal of the four trunk lines; but to do so, it would have to swallow its pride. It would have practically to admit that the five-system plan had been a mistake. Consequently, if I were to make a forecast—though I know of no other industry that has suffered such a deflation dur-

ing the present depression as the forecasting industry—the only forecast I should have to make would be one of difficulty and trouble when the plan was finally presented to the Commission for its consideration and approval.

Furthermore, it would seem to be the case that the four large trunk lines had agreed that, provided it went through without change, they would all abide by the uniform agreement. But, if the Commission should exercise its power of changing it, any of the four trunk lines might kick over the traces and refuse longer to be bound by an agreement whose terms had been altered by the governmental tribunal whose sanction had been sought.

The four-system plan allows the Pennsylvania control over the Norfolk & Western. The Commission's plan contemplates the severance of the Pennsylvania and Norfolk & Western. The Pennsylvania will never consent to letting the Norfolk & Western go until it has fought the matter to the last ditch in the court of last resort. Similarly, the Baltimore & Ohio has been required by the Commission practically to divest itself of its holdings in the Western & Maryland, as an alleged infringement of some of the provisions of the Anti-Trust Act. Yet the four-system plan assigns this property to the Baltimore & Ohio. My misgiving is that when this agreement reaches the Commission, at least some modification will be attempted, and I shall miss my guess if the assent of the Commission is attained. Any action is not likely to be immediate, and the amount of evidence which will have to be taken properly to dispose of the case in question will be large. Final action will, therefore, be deferred by reason of the magnitude of the case.

When the Commission put out its final picture of railroad consolidation, it treated New England in this fashion. It made no change in the New York Central's control over the Boston & Albany. It permitted the Canadian National and Canadian Pacific to retain those strings to their system lines that spread through New England to the south and east. The Commission's picture of consolidation for New England contemplated a two-party system, the Boston & Maine being made the nucleus of a northern system, and the New Haven of the southern. To each of these proposed systems certain streamers were attached. The New Haven system was to have the two trunk lines which reached from Campbell Hall to the coal regions of Pennsylvania; the Boston & Maine was to annex the Delaware & Hudson and that branch of the Rutland that runs over to Ogdensburg. But the Commission's picture left untouched the controls already in existence in New England and employed two systems, one a Northern and one a Southern, giving them certain streamers to their New England lines in order to permit interchange of traffic with lines west of the Hudson.

When the four large trunk lines built up their agreement they regarded New England as practically outside it altogether. They did not touch the present or the future of the hook-up of New England lines, and yet the fact that this four-party plan is shortly to be presented before the Commission, and that it will inevitably have a serious bearing upon the railroad situation in New England, has excited considerable interest in that section and has resulted rather unfortunately in several sharply divergent points of view as to what should be the attitude of the region.

When we come to analyze the differences of opinion that have been expressed in New England with reference to what attitude New England should take to the proposed four-party plan, we have in the first place a group that may not unfairly be termed the annexationist group, centering largely in Rhode Island, and particularly in the city of Providence. That group takes the position that no effort should be made to attain a distinctive regional system of New England railroads; that the New England railroads are destined to become mere terminal annexes of the great trunk lines to the west, and that assistance in this plan of parceling out New England lines to the trunk lines is the appropriate policy so far as New England is concerned. It proposes, therefore, not to object but to acquiesce in the acquisition of complete control by the Pennsylvania over the New Haven, and it also proposes that the Nickel Plate-Chesapeake & Ohio be given control over the Boston & Maine. I confess that this last control seems a very remarkable and unusual proposition. How the Chesapeake & Ohio could climb up over a shoestring line of the Delaware & Ohio and effect a back-door entrance into New England and thence radiate into all New England, and how such a hook-up of mileage would be consistent with economic operation, appears to me as one of the rather absurd propositions forced on our Providence friends by the stand they have taken.

To some it seems that Providence is suffering from an illusion of grandeur as to the future of the port of Providence; and the imagined future importance of Providence as a port has led that city to minimize the importance of New England as a whole. There we have the idea of the annexationists that New England is to be the back yard of the great trunk lines. It is curious that the Rhode Island people have recently received what appears to be the support of the mutual savings banks of Massachusetts. If one may trust the reports in the papers, the mutual savings banks have reported to the public that they regard the annexationist plan as the proper scheme for New England. They are motivated by their apprehension that if the Pennsylvania were required to divest itself of ownership in whole or part of New England railroad securities, those securities would be thrown upon the market and effect a very substantial recession in the value of securities held by the savings banks of New England. The Providence plan leaves untouched the control of the Boston & Albany and that of the Canadian trunk lines of their mileage in New England. This then is the first of the attitudes taken by New England groups. Accordingly this party urges that when New England makes its appearance before the Commission when the trunk-line plan comes up for consideration, it should take the position that after all the New England railways are to be parceled out in the fashion that I have mentioned, and make no objection to the holdings of the Pennsylvania road in the New Haven, but be favorable to extension of such control over the New Haven as the Pennsylvania interests may see fit.

The opposite party, because we can divide New England opinion into two opposing camps, is what might be called the self-determinist group. That body argues that there should be retained substantially a regional New England system, not an annex under the control of western trunk lines; and this body of self-determinists has on the whole approved of the proposed combination of

the New Haven railroad and the Boston & Maine. The reasons why these should be merged need not be detailed here. They are complementary rather than competitive. Certain economies would be effected. Public opinion likewise would probably be more effectively felt if the control of a large regional system remained in the territory which it served.

There are various reasons for saying that such a combination would be no menace to the shippers of New England, and would afford better transportation than at present, and that the plan on the whole is a sound one. With control resting in the territory served, prompter response to the requirements of the district is more likely than if this region were dependent on the goodwill of foreign and absentee landlords. It is a more favorable policy, this local control, than transferring it to a distant center of Cleveland, or Baltimore, or New York. Here again there is a dissenting party. The New England Traffic League, in its reaction upon the report of five of the states to the New England governors, declines to approve the combination of the New Haven with the Boston & Maine. The League is not willing to give its consent until it gets certain assurances as to the policies of the combined companies. They mention particularly the Boston & Maine routes affording water transport to New England ports, feeling that if the Boston & Maine were combined with the New Haven, the combination would seek to divert traffic now moving by rail and water to all rail routes over the combined system.

I cannot feel that this apprehension has a very sound basis. The New Haven is operating its sound steamer lines now. There are independent lines operating between New England and New York and other ports, and the apprehensions of the New England Traffic League seem to me rather groundless. The real cleft in the camp of the self-determinists, those who favor a large regional system, comes when the question arises as to what attitude should be taken with reference to the control of Pennsylvania interests over New England carriers. The ownership of the Pennsylvania is now 20% or 22% of the voting stock of the New Haven railroad, and the New Haven in turn, by its ownership of a very substantial block in the Boston holding company, together with Pennroad ownership in the Boston & Maine, seems to be in the position to control the destinies of the Boston & Maine. The railroad committee, appointed by New England governors, Rhode Island dissenting, in its report to the governors, says that it assents to the fusion of these two New England lines with the retention of the control locally; but only on consideration that the Pennsylvania holdings in the New Haven and Boston & Maine be done away with altogether or be reduced to something like 10% of the voting stock of the two systems. Ten *per cent* is named because it is so small as to preclude effective control. In the report the majority of the railroad committee, after saying farewell to their Rhode Island brethren, recommended that this effort to divest the Pennsylvania of its holdings first be attempted by friendly negotiations. Anticipating perhaps that the response might not be the desired one, they suggested that when the four-system proposal comes before the Interstate Commerce Commission, New England intervene and require divestment of the Pennsylvania control over New England carriers. Fearing that even the Commission might find

this a difficult position, particularly since no similar attempt is made to touch the stranglehold upon the Boston & Albany, they eventually contemplate legal proceedings, using the Sherman Act or the Clayton Act to bring about by legal decision what is impossible to attain by negotiation or by convincing the Interstate Commerce Commission to impose this as a requirement of the four-party plan.

Personally I am in hearty agreement with two of the five members of the Massachusetts Committee, Mr. Jones and Mr. Richards, who go along with the majority to the extent of approving the consolidation of the New Haven and the Boston & Maine, but who do not approve the means proposed of compelling the Pennsylvania to give up its holdings in New England lines. They say that control at present is not prejudicial and far from complete; that there is no evidence that transportation has in any wise been prejudiced by the alleged control at the present time; and that the attempt to coerce the Pennsylvania to give up its holdings in whole or in part would be an unfortunate situation for all concerned. It might endanger the securities of both lines affected. They say that when such control becomes a real menace, and not an imaginary one, in case the Pennsylvania holdings shall have been further augmented, and when this results in prejudice to shippers of New England, it will then be time to take measures to see what should be done about foreign control of New England lines. I think that we in New England are unduly disturbed over the menace of Pennsylvania control of the New England carriers.

Our solicitude reminds me of the story of the Scotch dominie who was awakened late at night by a slightly inebriated parishioner. The fellow demanded that the dominie come downstairs and explain to him certain differences between fundamentalism and modernism. When the dominie told the chap to go along home and sober up and that he would be glad to explain such theological points in the morning, he replied, "But dominie, when I'm shober I don't give a damn!"

Whatever may be the action of the Interstate Commerce Commission on the proposal of a four-party system, New England will not be very seriously menaced in the immediate future, as things look at the present time. The industrial tonnage of New England, the enterprise of its railway managements, and its shore-line water service afford ready access to the markets, and will, I think, in the long run assure us of a transportation system efficient, economical, and adequate to the regional needs of New England.

BUSINESS PROBLEMS OF CITY MANAGEMENT

By C. O. SHERRILL

THE management of our cities is one of the biggest problems before the American people today. It is designed to give service to citizens, but really throws away millions of dollars daily through graft and inefficiency, thus depriving the residents of municipalities of their rightful heritage of good living conditions. When we shall have solved this problem of urban self-government, there will be solved at the same time and by the same act most of the political problems that now plague our Nation. Organized disrespect for law, including bootlegging, hijacking, racketeering, burglary, robbery, kidnaping, corruption of judges and executives—every one of these crimes, perpetrated by organized gangs with the connivance and protection of unscrupulous politicians, is fostered by the rottenness of politically dominated local governments.

There has been great improvement in the government of many of the small cities of this country in recent years, but our large cities have not improved and, on the contrary, are in many respects today worse than they were in the palmy days of Boss Tweed, because of the larger sums in city budgets in these days. Waste from inefficiency is enormous, and when to waste is added graft by unscrupulous officials, the total becomes staggering. With these huge sums available and so many opportunities for graft, it is not surprising that municipal government has been the most fertile field in which greedy politicians have cultivated their perennial crops of waste and corruption. Not only are rapidly increasing appropriations available for waste, but there is a large additional treasure constantly on tap in the shape of sums paid by criminals for protection of the operation of rackets, speakeasies and dives of various kinds.

In this connection, it should be borne in mind that most of our industrial corporations which have attained great size have done so under the guidance of efficient managements inspired with a desire to build. On the other hand, growth of our large cities has been quite independent of, and often in spite of, the calibre of the management they have received. With presumably the best brains of the community devoted assiduously to business and professional pursuits, with large foreign elements and general lack of civic consciousness, and with organized professional politicians reluctant to lose lucrative sources of income, it has been practically impossible in the largest cities to secure the united and concerted action of the better elements necessary to "take over" and administer an ill-governed city. In the business world, the past few years have witnessed a number of "proxy fights" arising from conditions of inefficient or dishonest administration on the part of those in office. While stockholders large and small have rallied in a common cause, success usually has been attributable to the voting strength of owners of large blocks of stock who were vitally affected by the conditions which obtained. In graft-ridden cities, however, the large taxpayer has no more voting power than the small with the result that the grievance must be great in order to

summon the numerical voting strength to lay hold of the reins of government.

It requires no argument to demonstrate that the old form of Mayor-Alderman government with various modifications, as now operated in our largest cities, is a failure. In Chicago we find an intimate hook-up of the police and court with racketeers and gangsters. We have a picture of a mayor found guilty of retaining dozens of highly paid lawyers on the city pay rolls, without any compensating service to the city; and the recent disgusting display in the primary campaign. In New York we have a picture of the highest officials of the city convicted of sewer frauds amounting to many millions of dollars; of officials engaged in bringing carloads of liquor into the city on its own scows; of judges violating their trust by purchase of their offices; of police persecution of decent citizens and protection of the underworld. Even Philadelphia has not always kept its skirts clean.

How, then, can we save our large cities from the depths of political corruption in which they now wallow, with decent citizens powerless to help themselves, due to restrictions in forms of government and forms of elections imposed on them by the various state legislatures?

It is evident that we must look to some new system and some new authority in the hands of good citizens, to break up these conditions in our cities. Fortunately, there are a few outstanding examples of large cities efficiently and honestly operated, which demonstrate that large cities can be run decently if given opportunity. Let us examine the foundations upon which they are building, and try to discover the essentials to clean, efficient city government.

Requirements of Good City Government

One of the prime causes of increasingly bad government in our large cities is that the best type of citizens are steadily moving out to the suburbs to secure the benefits of life in the open spaces, at the same time being within easy reach of office and factory through rapid transit and motor car. This trend leaves the heart of each metropolitan area filled with undesirables, who then dominate the city government for their evil purposes. In many cases, state constitutions unreasonably obstruct annexation of adjacent suburban areas to the nucleus city; in this manner they effectively block the efforts of the better elements of the community to create unified government over a metropolitan area having identical interests and problems. In the Chicago metropolitan area there are so many overlapping governments and taxing districts that there is no possibility of fixing responsibility on any legislative, executive or judicial bodies. It is highly important that metropolitan areas of identical interests be allowed to consolidate and form unified governments, taking in all of the contiguous territory, to be operated in a single unified system, without overlapping or duplication of taxing and administrative authorities.

Such a movement is somewhat analagous to a number of recent mergers in the field of industry whereby duplication of sales and administrative expense has been eliminated by consolidation.

Another serious hindrance to good government in metropolitan areas is that state legislatures have heretofore been very reluctant to grant to cities the full measure of home rule essential for the solution of their peculiar problem. One of the leading students of municipal government in this country

recently made the remark that, with all the serious difficulties in which Chicago finds itself, it could be placed on a sound governmental basis within two years, if the State of Illinois would consent to grant to metropolitan Chicago full home rule, with proper restrictions as to bonded indebtedness and total tax rate. In some of the states, almost complete home rule has been granted to cities; for instance, in the State of Ohio, cities are authorized to adopt home rule on the vote of the people concerned, except as to limit of bonded indebtedness and certain supervisory functions in the matter of accounting procedure, also certain statewide police regulations. Ohio cities are even allowed, by vote of their citizens, to set their own limit of taxation for current operations. The result of this constitutional provision for home rule has been a steady and notable improvement in municipal government, notwithstanding that those cities are seriously handicapped as to annexation of adjacent areas.

Another vitally important right that should be granted to municipalities is that they be allowed to hold municipal elections on an entirely nonpartisan basis, candidates for the municipal council being nominated by petition and chosen by the method of proportional representation. Nonpartisan election is of the utmost importance in helping to break up the control over municipal government by organized political groups constantly interfering with the personnel and administration of the municipality in order to pay for votes and vote-getting service to the political organization. The method of election by proportional representation is a most valuable aid in securing this nonpartisan government in municipalities. It assures in every case an active minority in the City Council, so essential to good government.

It is common practice in the case of large corporations for various groups which have substantial interests therein to have representation on the Board of Directors in order that their interests may be properly observed and safeguarded.

On account of the similarity of interests in municipalities, it has been quite common, under the two-party form of election, for the majority party to elect the entire membership of the Council. Thus the active minority in legislative bodies, desired by the creators of the Constitution of the United States, is not secured at all in practice in the two-party elections in cities. An active minority is secured under the two-party system in the National Congress and in state legislatures because the area covered in each case is so large and the interests are so diverse that it has never been found possible to have one hundred *per cent* membership of either party. In a municipality, however, as mentioned above, this has been the rule, rather than the exception, but in the proportional representation method of election, it has been found impossible for any majority group to elect all the members of Council from its adherents. The reason for this is that the proportional representation method of election has been scientifically devised to assure every large minority group a representation in the elected Council. For instance, in the City of Cincinnati under the two-party election in existence up to 1925, the Council of twenty-six members usually had not less than twenty-five Republicans and not more than one Democrat. Under the present system of proportional representation in that city, the Good Government group, although controlling more than

twice the vote of the opposition, has never succeeded in electing more than six out of the nine Councilmen, the remaining three being normally elected by the Republican organization.

Assuming the correct territorial limits for the municipality, and having secured the proper measure of home rule and the correct form of elections, the next essential is that there shall be organized and continually in operation a large and representative group of volunteer citizens interested in good government, who are willing to work to establish a sound charter and, having secured such a charter, to strive unceasingly to secure the election of high-grade representatives to the City Council. Of all the cities having the City Manager form of government, Cincinnati seems to be the only one where the importance of such a well-organized permanent volunteer league devoted to good government is recognized. The City Charter Committee of that city was organized to secure a sound City Manager Charter in 1924 and, having routed the professional politicians on this question, has continued actively up to this time securing a majority of the Council in each election. The result has been a Council of outstanding ability and integrity. This league differs from the organized parties in that its members are entirely volunteer and do not try to dictate the conduct of the elected officials or executives.

The City Manager Plan of Government

Now, what is the best type of government for our large cities? Students of good government in the United States, through their organization known as the National Municipal League, have been studying the problem of city government for many years, and in 1920, came to the conclusion that they had found the correct solution to this organization problem in the City Manager plan of municipal administration. This plan of government has been in successful operation approximately sixteen years, and in that time has steadily increased in public favor, until at the present time there are 442 cities and towns in the United States operating under this system. Among the large cities in such successful operation are Cleveland, Cincinnati, Rochester, Norfolk, Kansas City and Fort Worth. In each of these cities there is a better government than ever before known by them under the older methods. However, there is great difference in the degree of efficiency and merit attained by the various City Manager governments. No matter how theoretically perfect a city government may be, there is still much dependent on the kind of people who operate the system, and also on the thoroughness with which the job of preparing the City Charter has been done. The City Manager form of government simply makes possible a business-like administration, but cannot of itself protect the city from graft and corruption if the City Manager is controlled by professional politicians. In Kansas City, where they have the two-party election, the City Manager and City Council are boss-controlled. In Rochester, the capable City Manager is hampered by an equally divided City Council controlled by the Republican and Democratic bosses. In Cleveland, the politically controlled majority of Council, hostile to good government, was responsible for serious abuses, notwithstanding a splendid administration given by the City Manager. In all of these cases, the highest measure of success has not resulted on account of faulty provisions in the Charters of these

cities. Not only from an examination of the results of many City Manager governments, but from personal experience as City Manager of Cincinnati for four and one-half years, I am convinced that a correct form of nonpartisan City Manager government, with members of the Council elected by proportional representation from the city at large, is the form best adapted to large cities, such as Philadelphia. In fact, the larger the city, the more necessary is this form of government to fix definite responsibility for legislation in the Council, for the business operations of the city in the City Manager as Chief Executive, and for the ceremonial and political leadership of the City government in the Mayor.

No one man can possibly perform all the political and ceremonial administrative duties supposed to be the functions of the mayor under the Mayor-Alderman form of government. The result in almost all large cities, under the Mayor-Alderman form of government, is that the city departments are allowed to run themselves without coordination or unity of direction, while the mayor, as in the case of Mayor Walker in New York, devotes all of his waking hours to his ceremonial and political responsibilities. It is not surprising, therefore, that inefficiency, graft and corruption result from such conditions. It is like operating the United States Steel Corporation without the President and General Manager, each department being supplied by the Board of Directors with plenty of money to spend at will. You can imagine how long the corporation would survive under such lack of unified control.

To illustrate how good government was established and has continued with increasing success for five years in one large city under City Management, I shall give a brief clinical report of the patient's condition, remedies applied and results accomplished.

Conditions in Cincinnati government had grown to be so bad during three or four decades preceding 1924 that a popular movement, under the leadership of a good-government group known as the City Charter Committee, finally succeeded in securing the adoption of the City Manager home-rule charter by an overwhelming majority. In 1925 this same group secured the election of a majority of the City Council, and the Council in turn appointed a nonresident engineer and executive as City Manager, and turned over to him full authority and responsibility to direct the city's business, as Chief Executive and Administrative Officer. In so doing, they followed the practice of the directorates of business corporations in securing for an executive an individual whom they considered well-equipped for the place by reason of his native ability and training, regardless of his place of residence and previous connections.

Except for a few unsuccessful attempts by two or three politically minded members of the Council, the provisions of the City Charter, which forbid interference by the Council or any of its members with personnel or other administrative matters, were strictly observed. I cannot too strongly emphasize the importance of having this provision in every City Charter, and it might well be coupled with a provision providing for a penalty in case of violation by members of the Council, for without this the members of the Council will be subject to continual pressure of voters for jobs, contracts and other favors. In well-managed business concerns, the Board of Directors, which is the counterpart of the City Council,

seldom, if ever, meddles with matters pertaining to staff or personnel, these being left to the discretion of the administrative executives. The firmly fixed idea of citizens, that they are entitled to jobs because they voted and worked to put in office a certain member of the Council, must be broken up and replaced by the sound principle that through merit alone can jobs be secured and held.

Handling City Business under the City Manager Plan

One of the first problems confronting the City Government and successfully solved by the City Council of Cincinnati was a complete reorganization of the city departments to secure efficient direct operation of the city's business.

1. The first problem confronting the City Manager was the rehabilitation of the shattered morale of the personnel in all departments, especially the police.

When the new City Government took charge January 1, 1926, the work of the various departments was in a hopelessly demoralized condition. The streets were unspeakably bad; the police force was at the lowest ebb of efficiency and morale, thirty or forty policemen having, a short time before that, been convicted of conspiracy to defeat the Volstead act, and a number of them sent to Atlanta Penitentiary; crime was rampant, including bookmaking, bootlegging, gambling, prostitution—all of which were flagrantly and openly carried on under the protection of political leaders. The entire personnel of the city were ashamed to be known as employees of the City Government, and every department was undermanned and underpaid. Traffic was running wild, with no control; there wasn't a single motorcycle traffic officer or a single traffic light in the city.

The Police Department has been reorganized, inefficient and worthless personnel weeded out, and a better line of promotion and command put into effect. Gambling, bookmaking, bootlegging, prostitution, and all other crimes have been rigidly suppressed. The police force, increased in numbers, properly trained, organized, and attractively uniformed in snappy comfortable uniforms, is now the pride of the City, and instead of being a reproach is its best advertisement.

2. A simple, comprehensive traffic ordinance, enforced by adequate motorcycle and dismounted patrolmen, has brought order out of the previous traffic chaos; the public is backing up and supporting the administration; pedestrians are observing the traffic regulations splendidly; and motorists are constantly improving in their observance of the rules.

3. Streets have been put into excellent repair, and approximately six million square yards of holes filled. One hundred miles of new pavements have been laid, and savings on them of from 20% to 25% have been made through open bidding and less restrictive specifications. A large saving has also been made through careful selection of materials suitable to the particular job.

On one paving contract which was under way when the new Government took charge in 1926, a change to a better plan produced a saving of $750,000 on a five-mile concrete road. Numerous other instances of great savings occurred. The city's street-oiling contracts have been accomplished for approximately 40% of the unit cost for 1925. There were 50% more square yards of pavements built under the City Manager government in four years than were laid under the old régime in ten years.

4. New ordinances were passed reducing the rates of charges for gas and electricity by approximately $500,000 each per year.

5. The city has recognized the necessity of participating in the aviation development, and an airport of 959 acres has been purchased and developed, within fifteen minutes by motor car of the central business area of the city. This field will not only provide adequate area for aviation itself, but will provide a large number of suitable sites for the manufacture of airplanes and accessories.

6. A joint five-year bond program of the city, county and schools has been worked out, and issues of each of these independent agencies are in accord with an agreed schedule, so devised as to avoid any increase of taxes. The current expenditures are based on a complete, carefully prepared budget submitted to the Council by the City Manager as a basis for the annual appropriation ordinance.

7. Under this comprehensive plan, improvements have gone ahead steadily, rapidly and economically, at a slight reduction in the tax levy as shown by these figures: levy of 1925—$9.83, and of 1929—$8.86.

8. This long-time planning has been of great advantage in the problem for the handling of stabilization of employment, which has been in successful operation in Cincinnati for the past two years, under a Permanent Committee for the Stabilization of Employment, appointed by the City Manager at the end of 1928. Through the efforts of this Committee since that time, the employment situation has perhaps been better handled in Cincinnati than in any other large city in the country, and its method of operation has been adopted by such other large cities as Cleveland, Rochester, Indianapolis and also by the State of Ohio. Many of its features have also been of great value to the National Commission for the handling of unemployment recently organized by the President.

9. There has never been a bond issue submitted for approval of the electorate since the new government came into power that has not been approved, whereas, for the sixteen years previous to that time, the voters almost invariably rejected every bond issue submitted, due to lack of confidence in the integrity and efficiency of the City Government.

10. When the new government took charge, great pressure was brought from all sides on the City Manager, to induce him to clean out the City Hall of partisan employees with which it had been filled during the several decades it was controlled by the Republican organization. The City Manager refused to discharge anyone until such one had proved himself unworthy, a policy later recognized by everyone as sound, and, as a matter of fact, few discharges were found to be necessary because the old employees, almost without exception, responded with loyalty to a better leadership in the City Hall and the assurance that they were no longer subject to the arbitrary control of politics and political assessments to help pay campaign expenses.

The inefficient and politically subservient Civil Service Commission resigned shortly after the new government took charge and was replaced by the highest type of citizens, who have given a splendid merit system to the city.

At this point let me urge that no one thing is of greater importance in an honest, efficient administration of a city than is the Civil Service Commis-

sion of high-type citizens chosen by nonpolitical methods and, above everything, not by the elected Council. Such a Commission is a tremendous aid to the City Manager in building up an efficient personnel on the basis of merit alone. This Commission in Cincinnati is composed of three members, one of whom is appointed by the Mayor, one by the Board of Education and one by the Board of Trustees of the University of Cincinnati, thus assuring complete freedom from political domination. Let no one forget that control of appointments by political bolivars as a reward for votes and political service is the prime cause of rotten municipal government.

11. Under the new government there has been created and developed a completely coordinated system of transportation, which includes street cars, busses and taxicabs. From a condition of utter confusion on these forms of municipal transportation, the year 1926 represented the turning point in the coordination of these activities that has brought order out of chaos, so that today the city is provided with excellent means of transportation of all kinds.

The two outstanding features of the street-railway franchise are complete city control with a service-at-cost plan and constructive cooperation between the city and the company, which has resulted in the complete rehabilitation of the street railway's dilapidated property. Under this arrangement, the street-railway company has virtually become an important city department, the operation being entirely under city control, the stockholders receiving a guaranteed income of between 5% and 6%.

The control of taxicabs has been worked out by the placing of their operation on the basis of convenience and necessity, so that the number of taxicabs on the streets can be perfectly controlled by the city as a protection not only to the public but also to the taxicab operators.

12. Improvements have been made in the methods of street cleaning, garbage and trash disposal, so that the streets are kept in sightly and clean condition, free from unsightly rubbish. A system of incinerators has been built, in which the city's refuse is being burnt, and since July 1st of this year, this has included garbage as well as other waste.

The City's Workhouse which had been abandoned in 1918, prisoners being kept in the county jail, was rehabilitated and fully developed into a great corrective institution where the prisoners are given productive labor on a great many useful activities, including the repair, maintenance and servicing of all the city's motor vehicles, the operation of a large incinerator, the operation of the highway and street-cleaning repair garage, and a central sign-painting and insulation shop. In addition to this work the prisoners are used extensively on highway maintenance and improvements at the Municipal Airport.

Conclusion

Because of lack of space, it has been impossible for me to do more than touch on a few of the many improvements that have been made in Cincinnati by this new government, but more important than these specific improvements has been the improved morale and optimism and confidence of the citizens of the city themselves, which has been reflected in a private and public building program such as has never been known before. Among the

notable undertakings of this nature may be mentioned the construction of a unified freight and passenger terminal for all the railroads entering the city, at a cost of seventy-five million dollars. This work is actively under way and will be finished in three years.

What has been accomplished in Cincinnati can be equaled in New York, Philadelphia and Chicago, if the state legislatures will only perform their plain duty and obligation, to give to the cities of the state the right to choose their form of government for themselves. The problems of cities are so special and so peculiar that it is generally coming to be recognized that it is necessary to have practically complete home rule. The astounding scandals of graft and corruption in Philadelphia, Chicago and New York mentioned above are a direct result of government controlled by all-powerful political domination over elected and appointed city officials. The source and foundation of the powerful rackets levying their millions of tribute in the large cities today can exist only where the ward politicians control the ward policemen and protect the racketeer and gangster in their criminal operations from arrest or molestation. Until the American people have the courage and determination to break the bonds of this unscrupulous political control of our great cities, I can see no hope of salvation for our cities. So let me urge all good citizens to demand the right of their cities to rule themselves under this tried and approved method of City Manager-Small Council government, with elections by proportional representation, and backed by a large, representative, nonpartisan volunteer body of citizens working to create and maintain decent, honest government.

INVESTMENT TRUSTS[1]

By ARTHUR STONE DEWING

TO give any analysis of the origin or economic justification of investment trusts would involve much repetition of what has frequently been said, but it may be worth while to draw attention to certain operating problems in connection with them and to suggest briefly one or two matters that have a very real bearing on the position of investment trusts in the immediate future. The difference between the so-called management trusts and the fixed trusts, and the twilight zones between them, are today familiar to most students of finance. In the management trust, the board of directors or trustees have control of the portfolio and can do with it as they see fit, provided that they do not run counter to the statute of frauds. In the fixed trust, the portfolio is predetermined.

I

The first thing to which attention should be directed has to do with the costs of management in the so-called management trust. If we were going into the steel business, though it generally involves a large amount of capital, we could pick out some department of the business in which we might succeed with a small amount of capital, the manufacture of very high-grade tool steel perhaps. If we were going into the cotton business, we could pick out some phase of it such as the making of a high-grade specialty goods; and in most businesses we may select some department that can be run with little capital and so can gauge the capital to the size of the business.

What is the situation with the investment trust business? Suppose we have a management trust of $100,000. That $100,000 is forthwith invested in a mixture of common and preferred stocks, or possibly in common stocks alone. At the utmost, the trust will get 6% gross return from dividends. Thus $6,000 will be its gross receipts from which to pay counsel fees, transfer agency expenses, rent for some kind of an office, and statistical service. As a result, there is something like $4,000 left over. Out of this amount, something has to be paid to the stockholders and something to the management; and it is obvious, after all is said and done, that neither management nor stockholder will get very much. Clearly, then, we have in a $100,000 management trust a fund utterly inadequate to carry the necessary charges. In a fixed trust this might not be so true. So, as a first observation, I would contend that there is a minimum below which a management trust cannot be successful and that $100,000 is below that minimum. Suppose we have a management trust with an investment of $500,000. The income there would be about $30,000; the running expenses would absorb about $3,000 and management and operation $2,000; and the management would be tempted probably to seek speculative profits through the buying and selling of stocks. The smaller the fund at its disposal, the greater will be that temptation because

[1] Based upon an address delivered at the first annual Special Program for Alumni, held at the Harvard Graduate School of Business Administration, July 24 and 25, 1931.

of the necessity of producing a greater net income to satisfy its investors. On the other hand, if we have a $5,000,000 trust, the income will be $300,000. The running expenses will take $5,000, and the management may receive $45,000, still leaving $250,000 for the investors. Investment, like every business in the world, gets what it pays for in the matter of management. A $2,000 management of a trust is a very different proposition from a $45,000 management. Consequently, if there is to be a management trust, the larger trust is more likely to succeed because it has a larger revenue from which to pay the necessary management fees.

Such discussion implies that the small investment trust is inevitably doomed to failure because the gross income—the legitimate gross income from interest and dividends—is inadequate to pay the running costs of the trust plus compensation for fair managerial ability. If, in order to overcome this difficulty and expand the gross receipts, the management attempts to obtain speculative profits, failure must follow as surely as the day the night, because the management is sure to be inadequate to the task. A man whose skill as manager of an estate cannot command for him more than $2,000 a year cannot administer successfully a $5,000,000 estate; if he makes the attempt, the result is unfortunate. In the period from 1927 to 1929 a great number of small investment trusts came into existence. Some have been changed to fixed trusts and some have consolidated; for the others, unless some such solution is found, failure is inevitable.

II

A second problem to consider is why management trusts should boom during the up-swing of the cycle and fixed trusts become preeminent on the down-swing and at the bottom of the cycle. The answer is obvious. As the cycle goes up, the appraisal of the already existing portfolios of management trusts goes up quite out of proportion to that of the fixed-trust portfolios. Suppose a trust was formed in 1927, as a great many were, and the portfolio was manipulated on the rising tide of a bull market. Suppose the trust instrument and corporate charter permitted the borrowing of funds by the trustees for speculative purposes. The profits shown on the rising crest of the bull market could be enormous. As a result, the stockholders feel that the ordinary profits of the fixed trust, 25 or 30 points, are less than those of the management trust; and the information that management-trust shares yield a larger return becomes current. Likewise, it becomes generally reported that the management-trust shares are likely to appreciate very much in value. Under such circumstances banking houses could readily persuade men to invest in their trusts—easy profits, easy money, easy people. That situation became universal late in the spring of 1928. In finance, as in any other business field, wherever there is a demand a supply arises simultaneously. The demand for management-trust shares became so keen that the number of such trusts increased daily. All this had its foundation in the rising tide of a great bull market. One of the corollaries of this excessive demand was that the securities of all these management trusts were selling at prices in excess of the liquidation value of their portfolios; and although the market value of the trust shares was far in excess of the liquidation value of their portfolios, a market for them

was made and maintained without much difficulty. Under those circumstances, the shares of fixed trusts could not be sold. People felt that they were living in a new era and that by the purchase of the shares of the management trusts they could come into their full heritage.

In finance, particularly in Wall Street, the pendulum always swings beyond the middle. In a long-continued decline of the stock market the pendulum swings past the middle point in the other direction, and widespread and uncritical fear becomes current. And just as the market prices of the management-trust shares at the time of promotion far exceeded the liquidation value, so when the portfolio declined in value and mismanagement was revealed, the public judgment was reversed. It then became current report that management-trust shares were the worst securities the public could buy. Under the law of demand and supply their shares were valued far below the liquidation value. In such periods of low security prices the fixed trust swings into prominence. Then bankers have nothing to sell except high-grade securities. New bonds are unsalable; so are preferred stocks, class A stocks, and undulating stocks. The investor is told he will probably never see such times again. The fixed-trust management tells the investor to come in with them and see what they are doing, and urges him to buy the securities while they are at the bottom. They say, "Though you have small funds, come in with us, we diversify, here, see our list." And they show the wonderful list of securities in their portfolio which begins with the American Telephone and Telegraph Company and ends with the Woolworth Company. "The people buying our shares buy their country at a bankruptcy sale."

III

Another point to which I wish to call your attention concerns the effects of these two forms of trusts on our financial background. The next up-swing of the cycle will be in the presence of and accompanied by a whole legion of investment trusts, as was not the case in 1921 for so few were in existence then that their presence was of negligible importance. In the next up-swing of the cycle they will be an everpresent phenomenon. What is likely to be their influence?

Let us first consider the fixed trust. This type of trust is created for the sole purpose of supplying the banking houses with something to sell, and, that being the case, the fixed-trust portfolio has to be "dressed-up" for sales purposes, as is true of any article to be merchandised. Anything to be sold must be made attractive to the consumer. The same principle is true in the sale of fixed investment-trust shares. If one wishes to form the South American Share Company as an investment trust, he must include in the portfolio stocks that will sell the shares. Familiarity is the first step necessary for arousing interest. If the investment trust should present to the prospective buyer a fixed-trust portfolio containing a list of securities no one of which he had ever heard of, the buyer would immediately say that he was not interested. But if a portfolio were presented, every one of the securities in which the buyer had heard spoken of highly, he would be immediately convinced that it was a good investment trust—a salesman would say that his buying consciousness was positive rather than negative. Now in

order to interest Main Street as well as Wall Street, one must begin his list with American Telephone and Telegraph Company and end with the Woolworth Company; though he may not be interested in the securities themselves, their presence in the portfolio will aid the investment company in its selling endeavors. If one or more of such stocks decline in value, one can say that he did not know that it was not a good stock, that everybody was buying it. But, if one were to add to the list a stock such as that of the Consumers Telephone Company of Hiram, Maine, and that were to fail, stockholders would comment that nobody had ever heard of that stock anyway. The position of the fixed-trust manager is particularly secure if he invests in "blue-chip" stocks because, even in event of their decline, he can point to the judgment of the community to excuse him. Thus brains, it seems, need not be expended in the selection of the portfolio; brains are required only for selling the shares.

To gain a complete understanding of the meaning of the situation, it is necessary to distinguish between different kinds even of "blue-chip" stocks. Industry has a standard early history. During the initial stages of any business (radio, textile or rayon) it is very difficult to get capital. Up to 1907 the whole automobile industry was financed by the reinvestment of earnings, and the same thing was true in the early stages of the motion-picture industry. During this period of the up-swing there must be a margin of liberal profits to make the business a success and permit this reinvestment of earnings. Then by the time it reaches its height in profits, it has solidified. Everybody has heard that the manufacture of automobiles has been made a profitable industry, and the fixed-trust manager may suggest that some of those stocks be included in the portfolio. So, too, in the early days, people who put their money into telephone stock did so for sentimental reasons; nobody had any confidence in communication by telephone as an industry except Mr. Bell. Now that industry has become so stabilized that every one buys a little telephone stock. When the top of the swing is reached, one of two things happens: either very keen competition enters in, as exists in the motion-picture industry at the present time, or the industry itself becomes so large that the profits become stabilized from outside pressure, as in the case of the American Telephone & Telegraph Company, which is compelled by public feeling to maintain low rates. That is to say, the later history of an industry will take one of two forms: either excessive competition menaces its profits or the industry is stabilized on a low profit basis. In either case the profits of the industry per dollar of invested capital are very much less than in the earlier stages of development, whether there be a gradual upward swing with a sharp recession, or an upward swing with a sustained peak of stabilization. We do not know at first whether an industry will be maintained at a long steady height of success and low profits, and consequent stabilization, or whether it will meet a quick drop and decay. Yet such stock is a so-called "blue-chip" stock and finds its place in the fixed-trust portfolio. Let us put this matter in another way: the fixed trusts buy stocks that are well-known and by that sign have reached a maturity of development. And while such stocks may command long-continued low profits, they may, on the other hand,

having reached the peak of their prosperity, be destined to decline and speedy failure.

Furthermore, fixed trusts "bid up" their "pets." The mere fact that all the fixed trusts must have these same securities in their portfolios creates for those securities an artificial market. Mr. Jones, the carpenter in Barre, Vermont, has not enough funds to buy a share of American Telephone and Telegraph stock at $180, but he has enough to buy four shares of South American, a fixed trust, at $7. Consequently he does so; and part of his funds, going in with other funds of a similar origin in the form of a fixed trust, is used to purchase the shares of the American Telephone and Telegraph Company. There is created in this way an artificial market for the security, a market that would not exist were it not for the fixed trust. In other words, the fixed trusts, through their own weight, give to the so-called "blue-chip" stocks an artificial value.

IV

Let us now consider the management trusts. These are of two types: the trust that is sold to the public because of Smith Brothers, who operate it, and the one which is sold by reason of its portfolio. In the first type the portfolio is of immaterial consequence, for Smith Brothers of Wall Street give a halo to the enterprise. In such a trust all depends on the judgment of the management, Smith Brothers. Such a trust is, to all intents and purposes, a blind pool in which the investor turns over to Smith Brothers certain of his funds. Smith Brothers are instructed to manipulate them for the benefit of all. If they are keen in selecting the stocks of the growing industries and choose those which will eventually become "blue-chip," then the management trust is very successful; if they get carried away by circumstances, it may be otherwise. What are the conditions under which they are carried away by circumstances? To repeat, Wall Street is either a confirmed optimist or a confirmed pessimist. Management trusts are promoted during the up-swing of the cycle. In the up-swing Wall Street is an exaggerated optimist. Consequently, Smith Brothers, manipulating their trust at that stage of the cycle, probably will use less than ordinary care in the selection of securities. The wisest and the keenest heads become infected with the virus of exaggerated optimism; and the managers, having much money at their disposal, probably use less than their traditional care in the selection of the securities.

If, on the other hand, the securities of the management trusts are purchased partly for the standing of the securities in their portfolios and partly for management, the trust becomes a mixture of the two types, as are the English investment trusts. In such a trust we may find outstanding bonds and preferred stock as well as common stock. At the Harvard Business School we have just partially completed a study of the result of the present depression on English investment trusts and American investment trusts. That study was probably not exactly fair; it is very difficult to make such a comparison fair. We took the valuation of the portfolios of two sets of trusts as of sometime, not at the very peak of the bull market in 1929, but of the late fall of 1928, and from that level we sought to observe the results of the depression. The outstanding results of this investigation, without going into details, were enough to show very clearly that the

English investment trusts went through the depression far better than did our investment trusts. Even when one evaluates them both on the basis of 1928, so as to put the English and American trusts on the same basis, the result of the decline in 1930 was much more serious with the American than with the English trust. What is the explanation of this situation and has it an immediate bearing on the future? Why was the Englishman able to carry on his investment trust and do it better than we have been able to do here?

The first observation to make is that it is partly a matter of tradition, almost of temperament. The Englishman, while having the Anglo-Saxon urge for speculation, has thrown greater emphasis on income as income. The British trust, which goes back almost to our Civil War, starts out to have a backlog in its portfolio which gives it assurance of a certain income. The American trust presumes that it is going to make a profit because it assumes that its portfolio will appreciate in value. The English believe in being concerned with income first, with appreciation second.

After a while the fixed trust will pass. The management trust, on the other hand, is something which we shall have with us permanently. To give it a respected place among American investment securities, we have to assume that the management trust exists for the purpose of making income for the investors. If the superior management, as against the inferior management, is going to declare itself, it will be through a rapid growth of earnings resulting from the inherent success of the corporations whose shares are included in the portfolio. Appreciation of value will come as a corollary, not as a main thesis. We must go back to the psychological attitude of mind behind the British trust. That is, the successful future of the investment trust will turn, not upon improvement of the methodology of the scheme, but upon a reversal of the stress of emphasis. It must be a trust created for income first of all, and any appreciation in the value of the securities should be a secondary concern of the management and result wholly from the increased earning power of the corporations included in the portfolio. If so controlled, the management trust should be an important element in our American finance.

TRENDS IN LARGE-SCALE RETAILING[1]

By MALCOLM P. McNAIR

WE usually speak of the industrial revolution in the past tense as if it were something that had happened a long time ago and were now a matter of interest only to the economic historians. Of course this is not true. The industrial revolution is still going on, as witness the Russian Five-year Plan, for instance. In the United States, however, the major scene of the industrial revolution for the present has definitely shifted from production to distribution. The economic historian of the future is likely to put his finger on the first three or four decades of the 20th century as the time when the marketing of commodities to consumers definitely developed away from the small-scale shopkeeping basis, parallel to the home industry or handicraft phase of manufacturing, towards a large-scale, fully capitalistic basis. The economic historian of the future, however, will have an advantage over us in being able to see this phase of the industrial revolution in something like a true perspective, whereas we are too close to it and almost too intimately concerned with its problems to be able to see clearly just what is going on. We can, however, name a few of the current trends which seem to give some clue to the general character of the change that is taking place.

(1) The trend from small-scale to large-scale operation of retail distributive enterprises has been sharply accelerated during the last ten years. Large-scale retail enterprises of the department store type are, of course, not new; nor are mail-order houses. In fact, following the initial period of development, when department stores and mail-order houses were subject to attacks less severe but of the same general character as those now being leveled at the chain store movement, these two types of retail enterprise apparently fitted into our marketing machinery without any very far-reaching effects. But since 1920 the growth of chain stores has been remarkable. Sales of the Great Atlantic & Pacific Tea Company, for instance, have increased from about $200,000,000 in 1922 to over $1,000,000,000 in 1929. According to the indices of the Federal Reserve Board, the increase in chain store sales on the basis of the monthly average 1923–25 as 100 was, during the period from 1920 to 1929, from 66 to 234 in grocery chains, 64 to 164 in 5- and 10-cent chains, 78 to 204 in drug chains, and so on. At the same time, department store sales over the period from 1919 to 1925 showed a fairly strong rate of increase, although not so rapid as that of the chain stores. Finally, in the latter part of the decade just closed, the chain store movement definitely appeared in the department store field. During this period from about 1920 to about 1930, therefore, the development of large-scale distribution became unmistakably a major trend. For better or worse this distributive revolution is carrying us away from shopkeeping to mass distribution; and the really surprising thing is that the forces of mass production did not cause this development sooner.

(2) There has taken place during the last ten years a remarkable growth of what might be crudely termed scientific methods in distributive business. One cannot examine the voluminous literature of retail associations, controllers' congresses, merchandise managers' groups, and what not, without encountering repeatedly such terms as "merchandise budget," "unit control," "open-to-buy," "retail inventory method," "quota-bonus plan," "expense classifica-

[1] Address delivered at the first annual Special Program for Alumni held at the Harvard Graduate School of Business Administration, July 24 and 25, 1931.

tion," "expense budget," and so on. All these are evidence of the general effort to get away from rule-of-thumb, expediency, hunch, guess work, and to develop some sounder methods of approach to the solution of business problems. It is quite proper to point out that more often than not the result of these efforts has been pseudo-science of the worst kind; but from the standpoint of long-time trends the important thing about these developments is the recognition that the old-time rule-of-thumb methods no longer are adequate to meet the problems of an increasingly complex distributive system.

(3) We have witnessed during recent years the increasingly rapid obliteration of recognized channels of distribution. Formerly there were fairly well-defined lines marking the boundaries between the respective functions of the manufacturer, the wholesaler, and the retailer. Furthermore, particular types of commodities had their own recognized channels of distribution and did not to any great extent flow over into other channels. Now we find that this picture is becoming more and more confused. It is an era of scrambled merchandising. Grocery stores sell cigarettes; drug stores sell grocery products; and tobacco stores sell razor blades. Grocery stores are on the way to becoming food department stores; department stores and variety chains operate luncheonettes and soda fountains. Functionally also the lines are breaking down. Manufacturers undertake to do their own retailing; retail chains undertake to do their own manufacturing; wholesalers seek to protect their increasingly precarious position sometimes by entering into manufacturing, sometimes by going into retailing through the formation of voluntary chains.

These three developments of the last ten years—the accelerated growth of large-scale retail enterprises, particularly of the chain store type, the marked interest in methods of management that promise to be more effective than guess and hunch, and the breakdown of recognized channels of distribution and spheres of activity—are among the significant symptoms of the distributive revolution which is taking place. We do not know whether this distributive revolution will continue for the next ten years at the same pace as during the last ten. If we are right, however, in the guess that we have hazarded in regard to the general direction of this movement, then we may expect the large-scale, fully organized type of retail distributive enterprise to increase in relative importance. At the present time the two major types of such institutions are department stores and chain stores. Developments of recent years suggest that we can disregard mail-order houses as an important separate type.

The preliminary figures for the Census of Distribution indicate a total volume of retail store sales in the United States of about $53,000,000,000. Figures are not yet available to indicate the precise breakdown of this total, but partial information so far released, together with estimates previously made by Dr. Nystrom[2] and others, seems to indicate that department store sales amount to 14% or 15% of the total and that chain store sales are perhaps 18% or possibly 20%. It was probably not until 1928 that chain store sales passed department store sales in total volume.

The Outlook for Department Stores

What is the present outlook for department stores as compared with chains? Taking the department stores first, it is clear that they are being more seriously affected by the current business depression than are the chains. In fact, the department stores are suffering much more severely than they did in the last great business depression,

[2] See Nystrom, Paul H., "An Estimate of the Volume of Retail Business in the United States," HARVARD BUSINESS REVIEW, January, 1925, p. 158.

in 1921. At that time the success of the department stores in weathering the storm was one of the factors which helped to develop the interest of the public in department stores as an investment possibility. In 1930, however, the average department store with sales over $2,000,000, according to the Harvard Bureau of Business Research, made a net gain, or net business profit, of only 2.7% of sales, or 4.9% of invested capital. The reason for this relatively poor showing of department stores in 1930 lies in unfavorable trends which began developing as far back as 1926. Over that period sales volume remained substantially unchanged until the decline in 1930, the gross margin percentage also remained stationary, and total expense increased sharply. Earnings in ratio to capital invested declined in 1927, 1928, and 1929, in sharp contrast to the earnings of manufacturing companies during this same period. For smaller department stores, those with sales under $500,000, there has been a steadily unfavorable trend since 1923. Over that period gross margin increased only from 27.6% to 29.0% of sales, while total expense increased from 25.9% to 32.2%. Stores in this classification apparently have felt the competition both of the large department stores and of chain store organizations. The principal point to be emphasized from these comparisons, however, is that the poor showing which department stores made in 1930 and which they are likely to make in 1931 is not to be attributed wholly to the business depression, but rather reflects in considerable part a culmination of unfavorable trends that began developing as far back as 1926. Department stores were headed for difficulties even if there had not been a business depression. In fact, it is not too much to say that many department stores were better off in 1921, a year of business depression, than they were in 1929, a year of supposedly great prosperity.

These trends suggest that there are certain elements of weakness in the situation of the average department store. Some of these are as follows:

(1) Management effort is dispersed over too many departments handling too wide a range of merchandise. Although the buying power of the organization as a whole is large, when it is divided into a hundred or more departments it does not compare favorably with the buying power of specialty chain organizations. Even more important, in the individual department of a department store there frequently is insufficient sales volume to justify hiring a really competent executive. The remarkable growth of leased departments during recent years is a tacit acknowledgment by department stores of this weakness.

(2) The cost of doing business in department stores has increased steadily for ten years. During that time the typical amount taken out of the consumer's sales dollar to meet costs of operation has increased from about 26 cents to about 34 cents. Measured by this standard the department store is not an efficient agency for the distribution of merchandise at retail. The relatively high cost of doing business in department stores is in the first instance attributable to their relatively low productivity. For department stores with sales over $10,000,000, average sales per square foot of total space are only about $29 or $30, and below that sales volume the output per square foot is lower. Chain stores, getting greater productivity from the space which they use, can and do pay higher rentals in percentages of net sales than can department stores. The productivity per capita of persons employed in the department store business is also low. For stores with sales of $10,000,000 or over, average annual sales per employee are $8,500. This low output per capita reflects in part the high proportion of nonselling employees in department stores. Usually

from 50% to 60% of the total employees in a department store are in the nonselling classification. Both the low productivity per square foot and the low output per capita reflect in part the rather complicated physical and human mechanism apparently necessary to handle the wide variety of merchandise sold in these institutions.

(3) Competition in services among department stores has reached a point where it not only contributes considerably to the high cost of doing business but actually interferes with the effectiveness of selling. Returns of merchandise by customers in large department stores, for instance, amount to over 14% of net sales. Competition in credit terms is steadily lowering the turnover of accounts receivable. In at least one large city, one or two stores have taken the initiative in discontinuing the charge for alterations on women's garments.

(4) Certain changes not wholly favorable to department stores appear to be taking place in consumers' buying habits. Shopping in the old sense of the word not only has become less necessary with increasing standardization of merchandise and wider spread of style knowledge, but actually, because of traffic conditions, has become more difficult. At the same time, the growth of suburban shopping centers makes it easy for customers to buy many articles of merchandise at nearby points.

(5) Department stores still are organized predominantly as buying institutions rather than as selling institutions. It is too hard work to buy merchandise in the average department store. There is too much red tape, lost motion, annoyance, and so on. In spite of the lip service they render to the idea of acting as purchasing agents for their communities, department stores do not make it easy enough for consumers to buy merchandise.

Looking at the other side of the picture, we can see that there remain several important elements of strength in the department store situation:

(1) The convenience of filling a variety of needs under one roof is still a factor of strength, although perhaps less important now than in the past.

(2) Department stores occupy established locations in definitely recognized retail trading areas, in many cases owning their own physical properties. The volume of retail trade in such areas, even though it may eventually decline with the growth of suburban shopping centers, will remain large for many years to come. Conceivably, however, it will tend to change in character.

(3) Department stores render many services to which the consumer has become accustomed and which many other types of retail organizations do not offer.

(4) A substantial number of department stores have developed institutional prestige with consumers.

(5) The notion that department stores in general handle high-quality merchandise, and the corollary notion that chain stores do not handle high-quality merchandise, still operates in favor of the department store.

It must be admitted, however, that the points of strength in the department store situation are not so impressive as the elements of weakness. Furthermore, some of the points of strength are of such a character that they are likely to become gradually less important with the lapse of time. Consequently it appears that the average department store, if one may hazard a forecast, must shortly make a choice between a decline, even though gradual, in its relative importance as a type of retail distribution and such a vigorous reorientation of policies, methods, and organization as will give it a new lease of life, perhaps in considerably changed form.

Chain Stores

To turn from the department store to the other important type of large-scale retail distribution, namely, chain stores, it must be at once observed that there are chains *and* chains. In fact, it is a misapprehension to speak of "the chain store" as if there were any such homogeneous entity. The grocery chain and drug chain,

performing a combination of retail and wholesale functions and displacing both the independent unit retailer and the wholesaler, present management problems quite different from those which characterize chain variety stores, for instance, where actually little or no warehousing is done but rather this function is shifted back to sources of supply. Speaking of chains, furthermore, we must remember that while the term chain store immediately conjures up a picture of such great organizations as A & P, Liggett, Woolworth, and so on, actually the small chains, those with less than ten or even less than five stores each, greatly outnumber the large chains and in the aggregate handle a substantial volume of business. In the city of Chicago, for instance, according to the recent census report, 2,000 stores are operated by national chains, 1,400 belong to sectional chains, 2,311 are in local chains of four stores or more, 744 are three-store multiples, and 2,018 are two-store multiples.[3]

A few years ago it was a favorite sport of marketing experts to delimit the boundaries of the chain store movement and lay down the law as to the sorts of things which chains could not do. For instance, it was said confidently that grocery chains could not handle meats or perishable fruits and vegetables, that they were limited to packaged groceries. A little later it was stated with equal confidence that chains were limited to staple merchandise, that they could not handle style and fashion goods. In all these cases events proved these conclusions wrong. Students of marketing, therefore, have become a little chary of predicting what chains cannot do. When some of the bolder prophets say that of course chains are confined to the cash-and-carry type of business, that the great stronghold of the independent merchant lies in the services which he renders, one remembers past attempts to predict.

Until recently there has been little authentic information on the operating expenses of chain stores. A little over a year ago, however, the Harvard Bureau of Business Research, operating on a grant from The Two Hundred Fifty Associates of the Harvard Business School, undertook a study of the margins, expenses, and profits of chain grocery stores in the year 1929, the same year which is covered by the Census of Distribution. The first bulletin of the Bureau on the chain store business, Bulletin No. 84, *Expenses and Profits in the Chain Grocery Business in 1929*, was published in June, 1931.

In its study of the chain grocery business the Harvard Bureau of Business Research received reports representing substantially half the chain grocery business in the United States. In 33,171 chain grocery stores operated by 82 companies which reported their figures to the Bureau, consumers spent slightly under $2,000,000,000 in 1929. Out of each of these consumers' dollars, the grocery chains typically took an average of 19.4 cents as a gross margin, from which to pay expenses and earn a profit. This figure means that the typical net cost of this dollar's worth of merchandise to the chains was 80.6 cents, including freight and after deducting all discounts and merchandise allowances.

Of this 19.4 cents, 18.2 cents was required to cover the cost of doing business, including such items as pay

[3] U. S. Department of Commerce, *Retail Trade in the City of Chicago, Ill.* (Preliminary Report of the Census of Distribution), Washington, Government Printing Office, 1930, p. 12.

roll, rent, advertising, and supplies, and also including the interest on invested capital, leaving 1.2 cents out of each dollar spent by consumers as the pure net profit, in the sense of a reward for undertaking the risks of business enterprise. With the addition to this figure of the interest on owned capital and other net revenue, the total net gain, or, in everyday business language, the "net business profit," of these companies amounted as a common figure to 1.9 cents of the consumer's dollar, that is to say, 1.9% of net sales. Another way to look at this figure for net gain is to measure it, not in relation to the dollar of sales, but in relation to the dollar of invested capital. Looked at in this way the 1.9 cents of net gain taken by the chain grocery concerns from the consumer's dollar amounted to 19.5 cents for each dollar of invested capital, as represented by the net worth of the companies.

It is natural that on the basis of these figures attention should be directed toward comparison of marketing costs for the chain store channel of distribution with those for the wholesaler-retailer channel. Since the chain grocery company typically is both wholesaler and retailer, practically the only type of comparison that is feasible is to balance the expenses and profits of the chain grocery store, figured as percentages of the consumer's dollar, against the combined expenses and profits of the independent grocery store and the grocery wholesaler, also figured as percentages of the consumer's dollar. There are many respects, of course, in which such a comparison is not wholly satisfactory, since independent retailers do not buy entirely from wholesalers, nor do all chains buy entirely from manufacturers and producers. Furthermore, there are no fully satisfactory recent figures available for expenses and profits of wholesale and retail grocers. Waiving these difficulties, however, and taking as a basis of comparison sectional studies for 1929 in the wholesale grocery business made by the Ohio State University and of the retail grocery business made by the University of Nebraska, checked by studies of the Harvard Bureau of Business Research for earlier years, it appears that chain grocery companies in 1929, to cover their costs of doing business and profits, took out of the consumer's dollar approximately 8.8 cents less than did wholesale and retail grocers together. If the assumption is made that chain stores buy on the same terms as wholesalers, this difference in margins means that a chain grocery company buying merchandise at the same net cost as the wholesale grocer typically could have sold for approximately 90 cents merchandise which the retail grocer buying from the wholesaler normally would have had to sell for one dollar. It is probably a fair statement that a little less than half this difference represents the costs of credit and delivery service.

Viewing the chain store situation generally, with due recognition of the widely different problems faced by different types of chains, there are apparent certain fundamental elements of strength:

(1) Chain stores by and large are still in the expansion phase of their development. At present, for instance, with retail price levels substantially lower than a year ago, numerous chain store organizations are reporting dollar sales very nearly equal to their 1930 performance. Department stores, on the other hand, are falling about 9% behind the 1930 figures.

(2) Many types of chains have the advantage of a somewhat lower cost of doing

business, not all of which is to be accounted for by differences in services rendered. That is to say, there is evidence that certain types of chains, particularly those which combine wholesale and retail functions under one overhead, are inherently more economical channels for the distribution of merchandise than are many of the institutions which they are displacing. The greater efficiency of grocery chains, for instance, may be measured by the time required to move merchandise from the manufacturer or producer to the consumer by this channel as contrasted with the wholesaler-retailer channel. According to the Harvard Bureau's study previously referred to, it normally requires 36½ days to move goods from manufacturer or producer to consumer *via* chain grocery stores as contrasted with a total of 99¼ days required to move the same merchandise through the wholesaler-retailer channel.

(3) Chain stores have made it easier for customers to buy. The sales end of the chain store mechanism is not only more conveniently located but more simple and less time-consuming in its operation.

Turning to the unfavorable factors, we can discern certain distinct elements of weakness in the present situation of the chains:

(1) The chains have failed to develop goodwill sufficiently and consequently have left the door open for the present widespread anti-chain propaganda, most of which is not based on facts. It is true that some independent retailers and wholesalers have been put out of business, but trade mortality studies indicate that plain inefficiency has been putting these people out of business for a good many years past, and that the rate of mortality in these trades is little if any higher than it was before the advent of the chains. It must be frankly admitted, however, that such far-reaching changes in the distributive system as are being caused by the chains cannot take place without injury to those who are unable or possibly unwilling to adapt themselves to new conditions. The present outcry against the chains is fundamentally parallel to the periodic outcries of hand laborers against machines which have characterized various phases of the industrial revolution. Because there has been and promises to be a certain amount of real injury to some independent retailers and wholesalers, because the chains have been slow in recognizing the importance of cultivating goodwill, because they have frequently been shortsighted in their dealings with manufacturers, and because the arts of propaganda and manufacturing public sentiment are well understood in our time, the anti-chain store agitation has developed unexpected proportions.

The recent decision of the United States Supreme Court in the Indiana tax case has given added impetus to the already widespread movement to curb chain store activities by means of special taxation. Apparently this decision opens the door for all kinds of discriminatory legislation. In the Commonwealth of Massachusetts, for instance, a bill was introduced last year proposing to license each individual store beyond one at the rate of $750 per year in towns under 5,000, with a sliding scale from there up to $2,750 a year in cities with population over 500,000. The purposes of this bill were frankly punitive and confiscatory. Following the decision of the Supreme Court in upholding the Indiana tax on chain stores we may expect to see this and similar measures reintroduced in nearly all the state legislatures. It is unfortunate also that this decision comes at a time when state legislatures are eagerly looking around for new sources of revenue. Clearly this decision definitely forces the chains to take their case to the bar of public opinion. They must now do what they previously should have done in the way of developing a favorable and articulate public opinion to the point where state legislators will realize that consumers are friendly to chain stores and that consumers have more votes than storekeepers.

(2) Another element of weakness is to be attributed in some instances to the rapidity of growth of chain store organizations. In the scramble for desired locations numerous leases have been made at rental figures which cannot be justified within any reasonable period. Many chains, therefore, do *not* have low operating costs. In other instances effective merchandise control has not kept pace with the rate of expansion. Furthermore, there are undoubtedly a few instances of chain store promotions in

which the predominant motive was the cupidity of shortsighted investment bankers. A particular type of chain expansion that has not always turned out to be sound is the development of chains by manufacturers primarily as outlets for their plants. This type of chain, especially in the shoe business, has been far from uniformly successful.

(3) Chain store organizations have been slow to recognize the existence of personnel problems. Comparatively few chains have systematically gone about recruiting the type of personnel needed to build favor with the public. In many instances too much reliance has been placed on the efficacy of system plus relatively low-grade personnel.

(4) Chains have needlessly antagonized many manufacturers.

In summarizing their relative position it is perhaps fair to say that both the factors of strength and the factors of weakness of the chain stores are characteristically those which accompany any new economic development. Chain store methods and policies frequently are crude, and chain stores encounter the opposition of those business interests which have the most to gain from the preservation of the *status quo*. Yet a majority of chain store managements are young, vigorous, resourceful, imaginative. In the same way, department stores have both the strengths and the weaknesses of the mature type of enterprise. They are well-intrenched in an established position; habit and custom operate in their favor. But their managements are a little too conservative, a little too complacent, a little too lacking in vigor and initiative.

Chain Department Stores

Of course any consideration of the pros and cons of department stores and chain stores must necessarily take into account that peculiar hybrid, the so-called "chain" department store. When this particular hybrid was hatched, there was a good deal of cackling, particularly in Wall Street. But with the drastic decline in the market valuation of many chain department store stocks not a few of the experts on the side lines are ready to proclaim the offspring an ugly duckling and decry the possibility of any good results issuing from such a union.

In the first place, it must be stated definitely that so far there is no such thing as a real chain department store. The A stores of Sears, Roebuck perhaps represent the closest approach, and next in order the J. C. Penney Company. Such organizations as the Associated Dry Goods Corporation, Gimbel's, and the May Company are, properly speaking, department store ownership groups rather than full-fledged chains. One of the most essential features of a chain store organization is the centralization of management; and this feature is not as yet present in such department store ownership groups.

At the outset promoters and investors expected too much of department store "chains" formed by the merger process. They were misled to some extent, presumably, by the mistaken idea that chains in the department store field could readily duplicate the success of chains in other fields. The analogy, however, does not bear close examination. Chains in other fields have for the most part displaced stores of the comparatively small one-man management type. Department stores are large compared with unit retail stores, and even small-medium department stores have a fairly well-defined internal organization that is almost entirely lacking in unit stores. Furthermore, the unit stores which chains are tending to replace are in general very poorly managed. This is not true of department stores. Again, in the fields where

it has been most successful the chain typically has performed a combination of wholesale and retail functions. The opportunity to carry on such a combination of functions does not exist in the department store field, since department stores already buy largely from manufacturers. These are only a few of the differences, but they are sufficient to indicate that the supposed analogy of department store "chains" to other types of chain store organizations is of the most superficial character.

Great obstacles existed, furthermore, to the realization of any immediate economies in the operation of department store "chains." In the first instance it was necessary to develop some central organization, and such a central organization had to be superimposed on the existing organization of the stores. The immediate result of this situation was an increase rather than a decrease in expense. For the last three years the Harvard Bureau of Business Research has compared operating results for independently owned and for centrally owned department stores, and in each year the centrally owned stores have exhibited a higher ratio of operating expense than the independent stores. It is important to note, however, that the centrally owned stores frequently have achieved somewhat higher gross margins than the independent stores, the difference presumably reflecting savings from the pooling of purchasing power. It is particularly significant to note, however, that the expense of buying, as distinct from the cost of purchases, has usually run higher for centrally owned stores. These figures reflect the inevitable difficulties encountered at the outset in merging a group of large stores, each with a fairly complex organization. In the case of department stores, any transformation along chain lines is furthermore greatly handicapped by the fact that department stores, handling such a great variety of types of merchandise, have developed their buying on a decentralized basis, where it has been more or less inextricably interwoven with selling. Chains, on the other hand, specializing more narrowly in types of merchandise, have developed their buying on a centralized basis, where it has been sharply separated from the selling function. Hence the differences in practice, tradition, and point of view of the personnel concerned manifestly are too great to be overcome within any short period of time. Buyers in individual departments, for instance, are jealous of their prerogatives; they look with little favor on any steps which appear to diminish the importance of their positions.

It was foolishly optimistic, therefore, to expect that any immediate results of an outstandingly favorable character could be achieved by "chain" department stores. At the same time it is foolishly pessimistic to condemn these institutions out of hand and to see in them no possibilities for favorable development in the future. On the contrary, there are at least two considerations which should give pause to the managements of those independent department stores which have not yet seen their way clear to align themselves either formally or informally with groups of similar stores. These are as follows:

(1) Given the rate at which chain stores have expanded within the last ten years, and given the fact that as yet there seem to be no definite limitations as to the kinds of merchandise which chains can successfully handle, one cannot contemplate with equanimity the probable position of an independent department store, say 25 years

hence, confronted with specialized chain competition in perhaps half its departments.

(2) The marked rise in the cost of doing business in department stores during the last ten years and the corollary failure of independent department stores to make any headway in their handling of this problem point strongly to the conclusion that economies in department store distribution can be obtained only through such a radical and far-reaching reorganization as can be brought about only through the application of chain methods to a group of stores under central ownership.

The immediate problems faced by "chain" department stores are particularly difficult. Time is an essential factor in their solution, but in the opinion of this writer the experiment is amply justified.

Conclusion

Finally, it is well to be reminded that in the course of this distributive revolution we may confidently expect the development of new forms of large-scale distribution. To judge from what has happened in the department store field and what is happening in the chain store field, it is a fair generalization that types of distributive enterprise tend to develop through three stages. They start off very largely on a price basis—as chain stores did, for instance—they catch the attention of the consumer by distributing merchandise at low prices because of a low overhead. That is the first stage. The next stage is the "trading up" of the quality of the merchandise handled. We can see chain stores going through that stage today. After they have traded up the quality of the merchandise handled, and some of the price advantage has been lost in the process, distributive enterprises develop into a third stage, characterized by competition in services of all kinds, for instance, in allowing customers to return merchandise; by high costs of doing business; by largely competitive advertising; and by an increase in the ratio of the fixed investment to the total investment. Department stores today are in that stage. More and more money is put into plant and a smaller proportion carried in liquid form, and with this solidifying of investment and the higher costs of doing business, a lower return is secured on the capital invested.

Along with that, in this third stage there also takes place more or less hardening of the arteries of management. Merchandising becomes imitative rather than creative. The forces of inertia become very strong. Managers are afraid to step out and do new and radical things. That is the situation in which many department stores find themselves today; and when a large number of distributive enterprises reach this third stage someone else starts all over again on the low overhead, low price basis. Only recently the executives of a chain drug company in California were complaining bitterly because a group of "illegitimate stores," as they termed them, occupying limited space and handling only fast-moving lines of toilet goods, had had the effrontery to cut the chain store prices.

As the rate of return on capital declines in older types of distributive enterprises, ingenuity will be directed to the discovery of new methods of distribution. This is even more likely to be the case in the near future because, for the time being at least, our current condition of overproduction may tend somewhat to discourage the invention of new processes for cheapening production, with a resultant diversion of some inventive genius toward the field of distribution. In the days to come, there will be Strauses and Woolworths, but they will not be in department stores or in the present types of chain stores.

MANAGEMENT'S CONCERN WITH RESEARCH IN INDUSTRIAL PSYCHOLOGY[1]

By WALTER V. BINGHAM

THE human equation complicates nearly all problems of management. Answers to such problems are never definitive until this human factor has been taken into the reckoning. It must be dealt with either by the rational method of philosophy, by common-sense methods of observation, conference, and intuitive judgment based on practical experience, or by the scientific method of measurement and controlled experiment. Each of these three methods of problem-solving is needed as a supplement and corrective to the others.

Psychology is the science of behavior. One of the youngest in the family of the natural sciences, it treats of a subject on which philosophy and common sense have been accumulating wisdom throughout the ages, even before the time of Aristotle or of Solomon. But it is less than three-quarters of a century since Gustav Theodor Fechner and Wilhelm Wundt first laid a basis for psychology *as science* by adapting to its subject matter the method of measurement under controlled conditions. It is scarcely half a century since Sir Francis Galton's *Inquiries into Human Faculty* initiated the really scientific study of individual differences; and less than a quarter-century has elapsed since Münsterberg's *Grundzüge der Psychotechnik* outlined the field of industrial psychology. As science, then, the psychology of the behavior of people at work is as young as its subject matter is old. In spite of its youth, its objectives have been formulated, its techniques of research have been developed, and its principles and point of view have been carried into many workshops, offices, and stores.

Psychology in its industrial applications has the double purpose of increasing the happiness and the earning power of those who work. This aim coincides with one of the main objectives of all business management conceived as a human enterprise, in the modern professional spirit. Managers, directing their enterprises in the common interest, are avoiding irritations and conflicts which hamper smooth operation, as they come to understand better and better the obscure emotions as well as the overt behavior of people at work, in relation to the conditions and influences affecting that behavior. The scientific study of these conditions and relations is the joint task of management and of industrial psychology.

Scientific research, defined in its most general terms, is the process of ascertaining precise relationships between variables. Fechner measured the strength of (a) the physical stimulus and (b) the corresponding sensation. The relationship between these variables he found to be a logarithmic function:

$$\text{Sensation} = k \log \text{Stimulus}$$

Galton invented many devices for measuring abilities and developed the

[1] A paper prepared for the Bureau of Personnel Administration and presented February 26, 1931, in its series of conferences on "Business Management as a Profession."

necessary statistical techniques for ascertaining the relationship between these abilities and measures of eminence or success in life. The kinds of variables which industrial psychology undertakes to measure and to relate are:

(a) Significant aspects of industrial behavior.

(b) Factors conditioning this behavior. What, then, are the measurable aspects of behavior which are significant for managers and workers?

Significant Aspects of Behavior in Industry

Output is one of these variables—quantity of output, quality of output, individual variations in output. On some jobs, to be sure, output is almost wholly determined by pace of the machine, condition of tools, supply of parts, quality of materials, and other factors external to the worker, and little if at all by the behavior of the worker himself; but on jobs where proficiency and effort count, the amount and quality of production in unit time furnishes one basic index of behavior. The contentions of Otto Lipmann of Berlin, in a paper on "The Human Factor in Production," read at the Paris Conference for Technopsychology,[2] are here in point. The inevitable trend of industrial mechanization, he reminds us, has greatly decreased the importance of the effort and ability of the individual worker. In some industries one applicant can learn the work about as readily as another. In some, a worker's personal dependableness rather than his skill is the essential. In still other industries and jobs, the rôle played by the human factor in determining output is as vital as ever. Five criteria are useful in measuring the relative contribution of the worker's own energy and ability:

1. The tempo at which he chooses to work.
2. The mechanically imposed tempo to which the workman can adjust himself; or the number of machine parts (*e.g.*, spindles) or machines (*e.g.*, looms) which he is able to operate.
3. Avoidance of errors, spoiled work, and accidents.
4. Speed and efficiency in eliminating disturbances and irregularities in machine or materials.
5. Quality of product, in the narrower sense.

These are illustrative of measurable aspects of a worker's contribution to output. Other closely related criteria of significant aspects of behavior are amount of earnings; time required to learn the job; rate of advancement; stability, or length of service; absences; illnesses; time lost through accidents and minor mishaps; number and value of suggestions made.

All these data are recorded by firms whose managers wish to base their decisions on facts. They also keep records of conflicts, both individual and group: violations of rules; disagreements; emotional flare-ups; acts of insubordination; strikes and lockouts; and also, when known, acts of sabotage and voluntary restriction of output.[3]

Difficult to ascertain, and yet possible to measure with some useful degree of reliability, are the more personal and subjective aspects of a worker's behavior: zest and interest in work; fatigue, weariness, and boredom; worries and pessimistic reveries.

Of great practical concern to workers

[2] *Personnel Journal*, 1928, Vol. VII, p. 87.

[3] On the extent and nature of workers' restriction of output in factories uninfluenced by trade unions, and the reasons employees have for doing less than a full day's work, see Mathewson, S. B., *Restriction of Output*, just published by the Viking Press, New York.

and managers alike are those subjective aspects of behavior subsumed under the broad term, *morale*. Closely related to morale are feelings of satisfaction and dissatisfaction. Does psychology have a yardstick for satisfaction? Can a man's happiness be measured? Not very precisely. But investigators like Hersey[4] have taken strides in that direction. In his study of emotional cycles among workers in a railway shop, made while associating intimately with these employees daily for many months, he not only recorded their fluctuations of output, tested their physiological condition from time to time, and noted the circumstances both on and off the job which might be influencing their feelings and behavior; he also found it useful to construct a scale of happiness, with steps ranging all the way from a maximum of zest and satisfaction at one end to a maximum of worry at the other. This scale is no micrometer, but a rough yardstick in terms of which he recorded how the workers felt during each quarter of each working day. When these observations were charted, they brought to attention indications of periodic ups and downs. The length of the cycles averaged five or six weeks. They were fairly constant for each worker, but differed for the different workers within a range of from three to nine weeks. This study, by the way, brought to light many considerations which have since proved useful in connection with supervisory conferences. Our present concern, however, is with the fact that quantitative measurements of feelings and attitudes, even though they yield only rough approximations to an ideal accuracy, are nevertheless being employed to advantage.

[4] Hersey, Rex B., "Cycles in Workers' Efforts and Emotions," *Engineers and Engineering*, 1929, Vol. 46, pp. 162–166.

Measurements of group morale, such as those made by Houser,[5] have a reliability somewhat higher than is possible with measures of individual attitudes. Thurstone's[6] scales for attitude measurement are illustrations of the most accurate measuring-sticks so far devised for use in this type of research. One of the necessary steps in contemporary psychology is the preparation of such scales and the determination of the reliability and validity of the measures yielded by them.

It is not enough, however, for the industrial psychologist to identify the significant aspects of industrial behavior and to construct scales with which they can be measured. To ascertain and measure the conditions which determine this behavior is, for purposes of control, an equally essential step. What then are the measurable factors conditioning such human behavior as we have been considering?

Conditions Related to Behavior

In a long list of such variables the first is the worker's fitness, his individual abilities and characteristics, such as age, education, and experience; emotional stability; interests; special aptitudes and talents; skill; intelligence; adaptability; strength and health. Each of these variables is susceptible of measurement, of more or less precise quantitative evaluation. The same may be said of the worker's social and economic status. Next may be men-

[5] Houser, J. D., *What the Employer Thinks*. Cambridge: Harvard University Press, 1927.

[6] Thurstone, L. L., "The Measurement of Opinion," *Journal of Abnormal and Social Psychology*, 1928, Vol. 22, pp. 415–430. "Attitudes can be Measured," *American Journal of Sociology*, 1928, Vol. 33, pp. 529–554. "Theory of Attitude Measurement," *Psychological Review*, 1929, Vol. 36, pp. 222–241. Thurstone, L. L., and Chave, E. J., *The Measurement of Attitude*. Chicago: University of Chicago Press, 1929, 96 pp.

tioned the length and adequacy of his specific training for the job and on the job. Extremely important is the amount and kind of personal supervision which he receives.

Then there is the organization of the work—layout, routing, supply of materials, instruction cards; work methods; tools and machines; postures imposed; variety or monotony of the task, *etc.* Hours, rest periods, and length of working week are easily measured; also, some of the work surroundings, such as lighting, temperature, humidity, dust, and noise. The social surroundings, the attitudes and behavior of fellow workers, are less readily described in quantitative terms.

Financial incentives, such as group bonus, and some of the nonfinancial incentives can be stated quantitatively; factors such as opportunity for advancement and uncertainties concerning layoff, wage cuts, accidents, health hazards, and old age, however, cannot be overlooked as determiners of behavior on the job. Indeed the whole range of personnel and management policies and methods must be reckoned with, including, for example, provision for employee participation in management, group insurance, unemployment compensation, and the like. And finally, there are all the factors involved in the employee's life outside working hours, his food and sleep, his standard of living, his use of leisure, and his home conditions.

These, then, are at least the chief factors conditioning individual behavior in industry. It is the task of industrial psychology to measure them and to relate them as definitely as possible to the various measurable aspects of industrially significant behavior.

Each aspect of significant industrial behavior listed in Column A, such as proportion of spoiled work, rate of advancement in salary or in responsibility, or degree of satisfaction in the job, has actually been measured or quite conceivably can be measured. Factors conditioning behavior such as those listed in Column B must also be measured, and their relationship ascertained to the behavior items in Column A. Interrelationships between the several variables within each of the two groups are also significant. Quantity and quality of goods produced, for example, are affected by regularity of attendance, number and severity of accidents, and other variables appearing in Column A, as well as by the conditions listed in Column B. The task, then, is extremely complicated.

It does not follow, however, that the problem faced by the industrial psychologist is utterly baffling, so that the methods of science must be put aside in favor of shrewd, unaided common sense, or that intuitive, impressionistic executive judgments based on conference and pooled "experience" are superior to precise records, measurement, and controlled experiment. True, the answer in its entirety is not going to be found in this generation, or the next. But taking the problem bit by bit, exploring minutely the relations of one of its variables to a few of the others, the findings often turn out to be of immediate practical value.

Hours, Earnings, and Morale

Among current investigations in which managers, workers, and psychologists are cooperating, some of the most timely are concerned with the effects of layoff and of part time on employees' feelings, attitudes, and proficiency. Everyone appreciates in a general way how profoundly the sense of insecurity and the anxieties induced by idleness,

Chart I. The Field of Industrial Psychology

Variables to be Measured and Related

A. Measurable Aspects of Significant Industrial Behavior		*B. Factors Conditioning Behavior*
Output Quantity of output Quality of output Proportion of spoiled work Excellence of product Variations in output		Fitness for work Individual abilities, characteristics, and desires, such as Age, education, and experience Interests; ambition Emotional stability Intelligence Strength and health Special aptitudes and talents
Earnings		Social and economic status
Savings		Training
Absenteeism, lateness		Supervision Methods and attitudes of supervisors
Labor turnover		Organization of work Layout, routing, supply of materials, instruction cards Work methods, tools, machines, postures, variety, *etc.*
Labor stability Length of service		Hours, rest periods
Time required to learn	as related to	Work surroundings: lighting, ventilation, noise, music, fellow workers, *etc.*
Rate of advancement		Financial incentives Salary, wages; fairness of rate Method of payment: day wage, piece rate, group bonus, *etc.*
Health Medical-examination data Records of illness		Non-financial incentives Supervisory encouragement or drive Approval of fellow workers, honor roll, *etc.* Graphic record of production Group rivalry, *etc.*
Safety Accident frequency and severity Lost time; minor mishaps		Opportunity for advancement
Suggestions—number and value of		Uncertainties concerning wage cuts, accidents health hazards, old age, unemployment
Conflicts, individual and group Disagreements; emotional outbursts Acts of insubordination Restriction of output, sabotage Strikes, lockouts		Miscellaneous: personnel and management policies and methods; provision for participation in management; group insurance; unemployment compensation; *etc.*
Fatigue (decreased capacity) Energy-cost (oxygen consumption)		Life outside working hours Food, sleep, *etc.* Standard of living Use of leisure Home conditions
Fatigue (feelings of weariness)		
Interest in work Feelings of zest; absorption in task Feelings of boredom, distaste, unrest		
Reveries, worries, hopes		
Morale, labor attitudes		
Satisfaction, contentment		

reduced earnings, and the necessity for readjusting the family standard of living affect a man's competence and his self-command. But when it comes to more precise and detailed knowledge regarding the mental consequences of alternative ways which different firms have used in meeting and cushioning the impact of unemployment, the data are meager in the extreme. Facts are needed, in order to decide which of the various methods of dealing with the necessity for curtailment of output are least damaging to morale and to mental health. Kornhauser, in an inquiry now being made in a Wisconsin industry, has been sharpening the tools of research in their application to these problems. Such studies should be duplicated in different industries and localities, and the findings pooled. This is the time to make them.

A closely related problem is now being studied in a New England factory, the question being, how can their unemployment-compensation plan be improved? This plan, introduced several years ago, has worked splendidly as an incentive to management to budget production and to coordinate sales effort with factory capacity. Seasonal peaks of employment have been cut down. A stable working force was maintained, at a high level of morale, until the plan collided with the current business depression. Then, after nearly a year of decreased sales, the management awoke with dismay to the realization that the plan was having just the opposite effect to that which executives and works committee had originally intended. They had overlooked the psychology of the foreman and the tremendous pressure which the plan exerted on him to resort to permanent dismissal instead of part time. Those on the pay roll still receive unemployment compensation after one day of idleness, but the pay roll itself has been shortened thirty *per cent.* The plan, needless to say, will be revised before another business cycle plunges the industry into a period of drastic curtailment, revised in the light of psychological as well as economic facts.

But we must not linger in the shadow of the present depression. What of scientific research on individual differences between workers and the relation between these measurable differences and behavior on the job?

Health, Aptitude, and Personality in Relation to Accidents

Street-car motormen operating in the hazards of city traffic differ greatly in the number of collision accidents in which they become involved. These differences are not mere matters of luck, for a study of individual records over a period of years shows that about 20 *per cent* of the men have been consistently in the prone-to-accident group, year after year. The ordinary methods of safety education and supervision, effective with the majority of the employees, have not adequately reached these accident-prone men. They have seen the same posters and taken part in the same safety contests as the rest of the motormen, and yet have continued to have more than their share of collisions. In order to develop effective ways of curing these particular men of their accident tendencies, it is first clearly necessary to find out how these tendencies are related to other differences. It is important to know the relation between susceptibility to accidents, and such variables as age, experience, specific operating skills, knowledge, health, native aptitude for this kind of work, and attitude toward the responsibilities of the job.

An excellent opportunity for the continuous study of such variables and for controlling them in the interest of public safety and of reduced operating costs has been supplied by the Boston Elevated Railway from 1927 until the present time.[7]

The first published account of this work[8] reported statistical data showing decrease of accidents with experience and with age up to 65 years; an inverse relation between accidents and operating efficiency as measured by automatic coasting-time recorders; and a positive relation between high blood-pressure and accident susceptibility. Other findings have been reported from time to time, together with descriptions of the means employed in bringing about a large reduction in the number of collisions with other vehicles and with pedestrians. For present purposes a single study of 86 motormen is selected, to illustrate the value of ascertaining how a man's accident record is related to his health, his aptitude for the job, and his attitude toward it.

This study, carried through by my associates, C. S. Slocombe and O. M. Hall of the Personnel Research Federation staff, was reported in the *Eugenical News* for February, 1930. Half of these motormen had had more than the average number of collision accidents. Forty-three of them then we may call high-accident men; forty-three, low. They were selected and paired for age, length of service, and operating conditions. These two groups differing in ability to avoid accidents were compared with reference

TABLE 1. ASSOCIATION BETWEEN ACCIDENT PRONENESS AND VARIOUS CONDITIONS AMONG 43 MOTORMEN WITH HIGH ACCIDENT RECORDS AND 43 WITH LOW ACCIDENT RECORDS, PAIRED FOR LENGTH OF SERVICE, AGE, AND OPERATING CONDITIONS

Condition Present	High	Low	Coefficient of Association, Q
Hernia	7	0	1.00
Abnormal blood-pressure	14	2	.82
Any health defect	21	4	.81
Psychological Trait "S" (score 3 or more)	7	1	.81
Insubordination (one or more reports, 1926–1928)	11	2	.75
Psychological Trait "S" (score 2 or more)	17	5	.66
Operating delinquencies	18	7	.57
Misses	11	4	.54
Setbacks Refused	10	4	.49
Absences	23	14	.41
Overweight	12	6	.41
Psychological Trait "G" (score 10 or more)	13	7	.33
Delinquency record (signs, etc.)	7	4	.31
Psychological Trait "G" (score 5 or more)	20	14	.28
Complaints by patrons	13	11	.12
Dullness (observed during testing)	9	7	.12
Record of shorts and overs	13	12	.04
Overtime (earnings over $2,300)	11	12	−.06
Breaks in employment	7	8	−.08
Less Reliable Items:			
Drinking	3	1	.52
Economic status (chiefly trusteed wages)	5	3	.27
Defective vision (not serious)	5	3	.27
Difficult home conditions	3	3	.00
Medical not specified above	3	3	.00

Explanation of Table:
Psychological Trait "S" means relatively poor performance in a serial-action test.
Insubordination means a recorded instance of insubordination within the previous three years.
Delinquencies means a record of operating ahead of time, not slowing up at street intersections, *etc.*
Misses means failure to report.
Setbacks Refused means refusal of operator to follow regulations when he has been long delayed in arrival at the end of his run.
Psychological Trait "G" means a group factor: relatively poor performance in the whole battery of tests.
Shorts and overs means turning in more or less money than is shown by the register.
Overtime means a large amount of overtime work as determined by reference to earnings. (Motormen regularly earn from $1,900 to $2,000 a year. They are paid time and a half for overtime. We made this inquiry to see whether fatigue during overtime tended to increase accidents; but even in excessive overtime, indicated by average annual earnings of at least $2,300, we found the same proportion among the high- and the low-accident groups. Perhaps the explanation is that the men who secure this extra work are older, safer men, assignment to overtime work being strictly in order of seniority, among the men available.)

[7] In these efforts to understand and to eliminate the personal causes of accidents, the 2,500 street-car motormen and bus operators have cooperated, as well as the street inspectors, supervisors and division superintendents, and the committee of the management at whose request the work was undertaken.

[8] Slocombe, C. S., and Bingham, W. V., "Men Who Have Accidents." *Personnel Journal*, 1927, Vol. 6, pp. 251–257.

See also, Bingham, W. V., "Personality and Public Accidents: A Study of Accident-prone Drivers." *Transactions, Seventeenth Annual Safety Congress*, National Safety Council, 1927, Vol. 3, pp. 174–182.

Dana, Edward, and others, *Safety on the "El."* Presentation of the Boston Elevated Railway for the Brady Memorial Award. Boston, 1929, pp. 51–88 and 187–190.

to 24 other variables. The results are summarized in the accompanying table.

Here is evidence that accident proneness is associated with personality defect or uncooperative attitude, as measured by records of insubordination, operating delinquencies, and failure to report for duty. Thirty-nine *per cent* of the high-accident men but only five *per cent* of the low-accident men were defective, as measured by this record of uncooperative behavior. Forty *per cent* of the high men and twelve *per cent* of the low showed lack of aptitude, as measured by test "S." Forty-nine *per cent* of the first group and nine *per cent* of the second had some health defect, as determined by the medical examinations.

At least one of these three conditions was present in 77 *per cent* of the high-accident cases, and in 23 *per cent* of the low-accident cases. The most interesting finding, however, comes to light when we compare the proportions of high- and low-accident men among the 38 motormen who had more than one of these conditions. Thirty-six of them are high-accident men; only two are low. Stated differently, the presence of more than one of these conditions in the same individual occurs in 42 *per cent* of the high group, but in only 2 *per cent* of the low group. In other words, within this sample of 86 motormen, if a man is defective in health and aptitude, or health and personality, or aptitude and personality, as measured in the way here described, the chances are less than one in twenty that he will be found in the low-accident group.

Safety Increased through Research and Informed Supervision

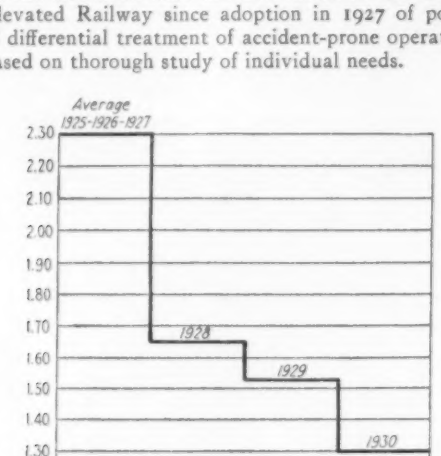
Findings of this kind emphasize the necessity of individualized treatment of accident proneness, a treatment based on diagnosis of behavior patterns exhibited both on and off the job, supplemented when necessary by medical and psychological examinations. Treatment then takes the form of specific instruction, medical attention, encouragement, or discipline, as the individual case may require, together with close supervisory follow-up. Much has been accomplished through the regular channels of supervision, as street inspectors, safety supervisors, and division superintendents have accepted responsibility for dealing with the motormen and bus operators in a manner which clearly recognizes the differences between the individuals whose work they oversee—differences in ability and strength, differences in skill and alertness, differences in temperament and health, differences in physique and age, differences in knowledge and training, differences in family circumstances and financial status, differences in worries, anxieties, hopes, and ambitions. Underlying all this effort is the definite knowledge gained through experimental and statistical studies of the sort described, together with analytical studies of the motorman's job, accident-location studies, analysis of individual accident records, clinical studies of accident-prone men, and close observation of the details of their actual operation. The practical result has been that collision accidents have been reduced more than 43 *per cent.* Men and management are proud of their fine accomplishment, and public goodwill toward the road has been increased among the car riders and pedestrians of the metropolitan district which it serves. The financial saving effected through decrease in deaths, personal injuries, and property damage has exceeded $400,000. Industrial psy-

CORRECTION

Chart 2, page 48, *Harvard Business Review*, October, 1931.

CHART 2. COLLISIONS PER 10,000 MILES OF OPERATION

Showing 43 *per cent* decrease in collision accidents on the street-car lines and bus routes of the Boston Elevated Railway since adoption in 1927 of policy of differential treatment of accident-prone operators, based on thorough study of individual needs.



chology has its economic as well as its humanitarian values.

The temptation is strong to dwell on the subject of job behavior as measured by accident records and costs and to describe studies of conditions both material and mental, significantly related to accident susceptibility.

The story would be long, if all were told. Distinguished psychologists in Germany, Russia, France, Denmark, Italy, and other lands have explored the mysteries of motive and habit, attention and distraction, visual acuity, reaction time, susceptibility to fatigue, self-control, and other aspects of human nature, in search of obscure causes of proneness to accidents and ways of eradicating them. Our colleagues of the British Industrial Health Research Board[9] have studied large numbers of

[9] Farmer, Eric, and Chambers, E. G., "A Study of Personal Qualities in Accident Proneness and Proficiency," *Industrial Health Research Board Report No. 55*. London: H. M. Stationery Office, 1929. 80 pp.
Farmer, Eric, "Psychological Study of Accident Proneness." *Personnel Journal*, 1930, Vol. 9, pp. 115–120.

apprentices and employees in shipyards and factories, to determine the relation of accidents to monotony of work, to proficiency, and to various differences of ability and personality. Their statistical investigations early proved that industrial accidents do not just happen; they are not distributed among the workers according to the laws of chance. In this country also, in studying records of accidents among factory employees as well as among street-car motormen and automobilists, more than half the accidents have been found to occur to a relatively small proportion of the men. These accident-prone workers are for the most part as eager to avoid accidents as any of the others. They have had the same training and supervision, but evidently require a more specialized, individual treatment. So the problem of the industrial psychologist is clearly that of developing the most effective ways of studying these accident-prone men and helping them to change or to compensate for their particular tendencies.

Employment-office Data and the Learning Curve, in Relation to Cost of Training and to Ultimate Success and Stability

The marked improvements in the accident situation which have resulted from these studies of the causes and cure of individual susceptibilities to accident are wholly due to better performance of men already employed, not at all to the adoption of new procedures of selecting candidates for the job. There has been an extremely small labor turnover, with no need for refinements in the hiring process. In other situations, however, initial selection of workers is the main problem, and management is interested in any data obtainable at time of hiring which have a demonstrated relationship to ultimate

performance. Bridgman's study of success in college and in business is here in point.[10] Then, too, after hiring it is useful to measure rate of progress as an aid in predicting probable ultimate achievement. How important it sometimes is to watch the individual learning curve and to use it in forecasting the final level of proficiency was illustrated during the course of an inquiry in which the writer studied a group of women engaged in tending machines which wind paper insulation on strands of copper wire. Their output is determined in part by the speed of the whirring machines, in part by the quality of the paper, since every break means delay. The worker's contribution to the output is mostly of Lipmann's Type 4. It varies with her quickness and efficiency in eliminating disturbances and irregularities—in stopping one of the heads the instant a break in the paper occurs, mending the break, and getting the head started once more. The job demands manual dexterity, strength and alertness, and also certain characteristics of temperament and emotional balance; a willingness to work at this kind of task and to be satisfied; and a self-command which enables the operator to maintain a steady poise when her usual output is suddenly reduced because something has gone wrong with her machine. If she is high-strung she becomes excited under these circumstances so that matters quickly go from bad to worse; whereas, if she avoids becoming irritated or confused when two or three of the heads she is tending go wrong at the same time, her output does not suffer so much. Such a person not only produces more; she is more apt to be contented and to continue at the work. The problem of initial selection consequently pointed toward a more precise use of items of information about the personality already obtainable on the application form, in personal interview, and in the medical examination. I have elsewhere[11] described the statistical methods used in ascertaining which of these items proved to be significantly related to stability on the job. Here I shall refer to predictions made from the new employee's learning curve. It was a question whether a new worker should be kept on this job after she had shown that she was not progressing so rapidly as the average learner. In other words, how closely was rate of progress related to ultimate proficiency? Did the slow learner finally reach a high level of competence and become as efficient as the more rapid learner? Or was it possible to find a level of minimum achievement in the early weeks of learning, such that if the operator's rate of progress did not reach that level it was advisable to see that she was transferred to some other type of work and replaced by a new employee who might perhaps prove to be more proficient?

Although a guaranteed minimum rate of 38 cents an hour is paid from the beginning, the services are not worth this minimum during the training period. The difference between actual earnings and guaranteed earnings during training constitutes a deficit which amounts on the average to forty or fifty dollars per employee. Moreover, these girls are operating costly equipment. The interest on the investment in one of these elaborate machines, the space which it occupies in the factory, and all the rest of the overhead properly charged to it against the product which

[10] *Personnel Journal*, June, 1930, Vol. IX, pp. 1–19.

[11] *Comptes Rendus de la IVme Conférence Internationale de Psychotechnique*, pp. 228–234. Paris: Alcan, 1929.

it turns out are about $2.25 an hour. This is nearly six times the wages of the operator.

Between a new operator who proves to be barely able to earn her way eventually and stay on the job, and one who finally attains to the upper quartile in proficiency, the difference in cost to the firm during a period of thirty-six weeks was found to be $390. This means that the employment interviewer, by selecting an applicant who will be among the best 25 *per cent* of those engaged on this job as compared with one who is barely able to succeed, saves the firm his own salary for a month. It is clear how much it means to have at each of these machines a girl who gets from it the full output.

We compared final proficiency with performance during the first week and found little correlation. The second week's record was not much more valid as an indicator of future performance, nor the third. But by taking into account the first four weeks, it was possible to set a reliable standard. If, during each of these four weeks, a new operator failed to come up to the minimum established, the probabilities that she would ever become a highly proficient operator were so small that her transfer to other work was known to be a desirable move, in spite of the substantial investment already made in her training.

Sound management practice now keeps more detailed individual records than formerly, and from time to time studies the data in order to discover relationships significant to the employment interviewer, to the foreman, and to the managers who determine personnel policies. Data as to feelings and attitudes, secured through personal interview, have their value in this connection, as well as the more objective data regarding output, accidents, attendance, and the like. The dependableness of the interview as an instrument for fact-finding in industrial studies has been made the subject of special investigation. We have put it to the test and checked the findings against objective data, in an inquiry as to the attitude of employees of the Crocker-McElwain Paper Mills toward their employment-guarantee plan, and also in an investigation of attitudes of 500 striking textile workers in New Bedford toward radical and conservative types of trade-union leadership.[12]

Unexpected By-products of Industrial Research

Current industrial investigations of the Western Electric Company in their great manufacturing plant at Hawthorne are proving their practical value to employees and to management. The story was told in the *Personnel Journal* for February, 1930, by G. A. Pennock, M. L. Putnam, and Elton Mayo. These studies were initiated nearly four years ago, when a small group of women relay-assemblers was separated from the other employees in this department and a series of observations and experiments was begun for the purpose of accurately determining individual variations in output and the relationship of these ups and downs to conditions of work—particularly to such factors as method of payment, length of working day and working week, nutrition, sleep, length and distribution of rest periods, and the like.

The procedure required that conditions be maintained as nearly constant as possible for a period of weeks, followed by the introduction of a single

[12] Bingham, W. V., and Moore, B. V., *How to Interview*. New York: Harper & Brothers, 1931. Chapters XIV, XV and XVI.

change, such as provision for a light lunch at the time of the mid-morning rest pause. After a while another change was introduced, for example, shortening or lengthening the working day. All this time, each worker's output was automatically recorded minute by minute. There was no pressure to speed up, no driving by the supervisor. But the workers were encouraged to tell how they felt, to comment on what they liked and disliked about the situation, and also to mention anything that happened outside of working hours which might be useful in accounting for their fluctuations in working efficiency.

The outcome has been astonishing. Workers' earnings and satisfactions have improved far beyond expectation, and in some degree quite independently of the changes made in physical working conditions. Information of real value was secured regarding methods of payment, optimal number, length, and distribution of rest periods, mid-morning lunches, and similar variables. But the management attaches far greater importance to what this experiment has revealed regarding the characteristics of effective supervision. The ability and willingness of the supervisor to listen rather than to shout orders; to know and understand each worker in his group; to be genuinely interested but not domineering; these are some of the aspects of good supervision which turned out to be vastly more potent than hours or rest periods or method of payment in improving the mental attitude of the employees and thereby increasing their productivity as well as their satisfactions. Indeed, a systematic procedure has been adopted, through a program of employee interviewing and a new type of supervisory training, in order to extend throughout the works to all the 30,000 employees some of the benefits first brought clearly to light in this modest experiment. Here, as in many scientific researches, the unexpected by-products have exceeded in value the direct returns, important as those have been.

Gradually industry is realizing the great potentialities of such experiments as these. Management is carrying over into the realm of human behavior the same scientific ideals that it has long demanded of the chemist, the metallurgist, and the engineer. In so doing it has taken steps toward the development of a well-rounded industrial psychology.

Functions Performed by Research in Industrial Psychology

Following these sample instances of research directed toward determining precise relationships between human behavior and industrial conditions, the question may be asked, what functions are performed by such research?

Obviously the major function is the buttressing of executive judgment—the replacing of opinion by fact, the correction sometimes of common sense, the grounding of policy and practice in certainty rather than in conjecture.

We have observed such research functioning to bring to light problems previously unsuspected or ignored. It is not easy to predict in advance just where a psychological inquiry will lead or what unexpected findings will turn up. Research is an adventure. Seldom has a thoroughgoing attempt, made to devise and validate employment tests for a specific occupation, failed to lead management to a fresh and wholesome scrutiny of its criteria of success on that job. The occupational analysis, which precedes the tentative selection of tests to be tried, often discloses improvements to be made in ways of doing the work or of

training the worker. One factory manager tells me that he values the research his plant psychologist has done, first of all because it has led his foremen to think. "She earns her salary and more when she goes out into the plant to follow up the success of the applicants she has examined, and insists, in her friendly way, on getting real facts from our supervisors." Perhaps not the least important function performed by psychological research in an industrial organization is the development of an attitude, a habit of thinking, on the part of executives. It is an attitude of inquiry, a habit of search for facts, an open-mindedness, a preference for experiment rather than for reliance on tradition or on snap judgments. One manufacturer said to me of his plant psychologist, "He is my anchor."

Yet another function of psychological research in an industry is to bring the human factor into perspective. Executives, absorbed in problems of engineering and finance, of processes and materials, of plant layout and production schedules, sometimes tend to take workers and supervisors for granted. But when these executives are investing good money and time in psychological studies, a greater part of their thought and attention becomes definitely focused on the effectiveness and happiness of their personnel.

Ways of Furthering Research

How may well-planned research in industrial psychology best be advanced?

In England it has been advanced chiefly through two agencies, one governmental, the other a private foundation sustained in part by fees for the industrial services of staff members and in part by contributions. The first of these is the Industrial Health Research Board, engaged in studying fundamental questions of industrial fatigue, of monotony and boredom, of accident proneness, and of proficiency in relation to personality and specific aptitude. Its specialists have had entrée to great industrial plants as well as to government shops. They have been more concerned to lay sound foundations of a general character than to make specific applications of the facts and principles discovered.

The National Institute of Industrial Psychology on the other hand sends its staff members on request into a plant for a few weeks or months or longer, to make a survey of conditions, and then to work out and apply solutions to the particular problems found to be uppermost. Its *Journal* gives the reader a fascinating record of accomplishment in mines, railways, steamships, banks, and restaurants, as well as in factories and stores. The two agencies appear to work in close harmony and to have the cooperation of university laboratories.

In Germany, universities and technological schools took the lead in developing industrial psychology. There is scarcely an engineering college in Germany without its elaborately equipped psychotechnical laboratory. Governmental agencies have been active. The tramway companies, the state railways, the great steel works, the dye industries and many factories have their own psychological laboratories in charge of specialists with university training. Research in technopsychology has in recent years found a stimulus and a support more nearly comparable to that given to chemical studies and mechanical invention.

What then of the United States? With a few notable exceptions, neither industries nor engineering schools have as yet placed advanced psychological

research on a secure footing, or intrigued the more able and eminent psychologists to abandon the university lecture hall for the factory and the opportunity to study human behavior where mature people are actually at work. The exceptions have, however, been slowly increasing in number. In colleges of technology there has been, during the past ten years, a growing tendency to incorporate in the undergraduate curriculum an introduction to psychology with some references to its industrial applications. There are also instances in which engineering schools as well as schools of business have added to the faculty psychologists whose main concern is research. Some industries have placed a psychologist on the industrial-relations staff or in the division of research and planning. Some have secured the part-time services of a university psychologist. Others have sought consultation from agencies such as the Personnel Research Federation or engaged their staff members to carry through in cooperation with their own executives specific studies leading to installation of the results of the research in the regular practice of management. Some firms have cooperated with the psychologists of the United States Civil Service Commission in establishing norms and standards useful in industry as well as in the government services. Each of these ways of advancing research in industrial psychology is feasible and has demonstrated its merit. In view of the complicated nature of many of the problems and the need for studying them where mature people are at work, as well as in the seclusion of university laboratories, the value of coordinated effort should be stressed.

Research should be functionalized. It needs a certain detachment from the immediacy of operating decisions. It requires specialization of background and training, as well as special facilities. It requires also ability to apply the findings within the practical situation. When a specialist with these qualifications is found, he should be allowed to concentrate on his research, free from the pressure and distractions of other responsibilities.

Management has, I believe, both a financial interest and a social responsibility in energizing and stimulating research within the area here considered; for what knowledge is more basic to industrial practice and to the progress of an industrial society than knowledge of the conditions affecting the "will-to-work," and hence affecting both the earning power and the happiness of those who labor?

The outlook for the future depends largely on the attitude of industrial leaders. Universities, engineering colleges, government agencies, and other research centers will respond by making adequate provision for fundamental, long-time studies, when executives insist on basing managerial decisions on a more solid foundation of scientifically ascertained facts regarding the feelings and behavior of people at work—behavior as related to the entire circle of incentives and influences, physiological, psychological, and social, as well as physical and economic, which profoundly affect proficiency and satisfactions. In the over-all planning which the evolution of business and manufacturing now requires of industrial statesmanship, research in industrial psychology will doubtless find its appropriate place.

THE FIRST YEAR OF THE BANK FOR INTERNATIONAL SETTLEMENTS

By RUSSELL D. KILBORNE

CREATED with the aim of removing the reparation question from the field of politics and diplomacy and placing it in the field of finance, where it properly belongs, the Bank for International Settlements[1] celebrated its first birthday on March 31, 1931.[2] The Bank showed a substantial growth during this period and finished the year with a profit. This happened despite the difficulties which the B. I. S. faced from its inception. These difficulties were the feeling of jealousy in England because the Bank was not located in London which might impair its financial prestige, the distrust with which it was greeted in the United States due in part to the attitude of the State Department in not permitting "any officials of the Federal Reserve System either to themselves serve or to select any American representatives of the proposed International Bank," a press and radio campaign characterized largely by inaccuracies and misconceptions and a general feeling that the Bank might interfere with vested interests. Other difficulties which the B. I. S. encountered during the first year of its operations were a business depression worldwide in scope and severe in character, political disturbances in India and Germany, a revolution in Spain and a general feeling of distrust throughout the world. But it is probably better for a new financial institution of this sort to be born in such an environment because it tends to produce caution, restraint and conservatism on the part of its management. At the same time, such an atmosphere tends to check expansion and undue optimism. Better, therefore, for the B. I. S. to start its activities during 1930 than 1927. It is the purpose of this paper to review the organization, growth and activities of the B. I. S. during the first year of its existence. I shall carefully avoid a forecast about the future because such forecasts are meaningless.

[1] Hereafter abbreviated B. I. S.

[2] The first fiscal year comprised a 10½ month period beginning May 17, 1930, and ending March 31, 1931. This period will be referred to as a fiscal year.

There has already developed a considerable volume of literature on this newcomer in the field of finance. See especially Harry D. Gideonse, *The International Bank* (New Brunswick, N. J., Bureau of Economic and Business Research, Rutgers University, 1930), 80 pp.; Paul Einzig, *The Bank for International Settlements* (London, Macmillan and Co., Limited, 1930), 179 pp.; K. P. Van Der Mandele, *The Bank for International Settlements* in HARVARD BUSINESS REVIEW, January, 1930, pp. 129–136; George W. Dowrie, *The Bank for International Settlements* in Proceedings of the Institute of Finance (Occidental College, Los Angeles, 1931), pp. 25–30. The best short account of the B. I. S., I have found is in the *Monthly Review* of the Midland Bank Limited for October-November 1930, pp. 1–9. Paul Einzig in *The Fight for Financial Supremacy* (London, Macmillan and Co., Limited, 1931), pp. 118–126, considers the B. I. S., in relation to the fight between Paris and London for financial supremacy. He advances a number of reasons why the Bank should have been located in London. The *Proceedings of the Academy of Political Science* for January, 1931, deals with The Young Plan in operation. Much of it is devoted to the B. I. S. The better metropolitan papers publish each month a balance sheet of the B. I. S. and they also carry news items about it on frequent occasions.

The Organization of the Bank

After having decided to locate the B. I. S. at Basle, Switzerland, the next step was to organize the Bank.[3] Its

[3] The material in this section follows rather closely part of the address of Mr. Gates McGarrah before

organization is divided into three sections: banking, relation with central banks and secretariat-general. The banking section has two divisions: one division is for foreign-exchange operations and the other for the receipt of deposits and making investments. This last division, because of the widespread nature of the banking activities, has three subdivisions based upon language requirements. One subdivision deals with markets where English is employed, a second where German is used and a third where French is the prevailing language.

The division for relations with central banks is headed by M. Pierre Quesnay, who has had a long financial experience in Austria during the period of her reconstruction, as economic adviser to the Bank of France and as an expert attached to the Young Committee. This division has various departments charged with certain specific duties. One department maintains contact with central banks; another centralizes information for organizing research on monetary problems, and for conducting the meetings of special committees consisting of representatives of central banks sent to Basle on occasion for the study of a specific problem. In general, this division does all the work involved in central bank collaboration—which is considered at some length later. The function of the secretariat general is to deal with administrative problems and includes the general accounting sections.[4]

The international character of the Bank is represented by the various nationalities employed and by its shareholders. The President is Mr. Gates McGarrah, an American, who resigned his position as Chairman of the Federal Reserve Bank of New York City to accept the post. He was formerly a member of the General Council of the Reichsbank in Berlin during the life of the Dawes Plan, and has had a long and eventful career as a commercial banker. His alternate, Mr. Leon Fraser, is also an American. The General Manager is a Frenchman. And as of March 31, 1931, there were 23 shareholders of different nationalities.

Growth of Liabilities and Assets

I shall consider the changes in the liability side of the balance sheet first, because it is the liabilities of a bank which determine, or should determine, the character of its assets. Failure to recognize this fundamental principle of banking is bound to result in failure. The liabilities of the B. I. S. can conveniently be placed in three groups —capital, long-term deposits, and short-term and sight deposits.

Capital has been increased from 77,500,000 Swiss francs, approximately $15,000,000 on May 21, 1930, to 103,187,500 francs, or $20,000,000 represented by an increase from 124,000 shares to 165,100 shares having a nominal par value of 2,500 francs a share, of which 25% has been paid.[5] These shares were controlled[6] by twenty-one central banks and a group of fourteen Japanese banks and three American banks. Since March 31, 1931, additional shares have been allotted or authorized for delivery to four other

the Academy of Political Science. See *Proceedings of the Academy of Political Science*, January, 1931, pp. 27–28.

[4] As of March 31, 1931, the total number on the staff of the B. I. S., exclusive of those used for the upkeep of the building and messengers, was 94.

[5] *First Annual Report of the Bank for International Settlements*, Annexes 3 and 4. This document will be cited hereafter as *First Annual Report*.

[6] Control is used because the Statutes of the B. I. S. provide that the voting power is vested in the central banks even though such central banks may—two have done so—sell their shares.

central banks. Each of the largest shareholders—there are seven such—controls 16,000 shares.

There are three long-term deposits. These are: Annuity Trust Account, German Government Deposit and French Government Guarantee Fund. These have grown from approximately $38,000,000 to $60,000,000.[7] None of these accounts bears interest but each one is entitled to share in the profits of the Bank. The Annuity Trust Account is a deposit kept with the B. I. S. by the countries entitled to share in reparations and, if maintained for five years according to the provisions of the Hague Agreement of 1930, these countries are entitled to a share in the profits of the Bank.[8] This account will presumably not increase in normal times but will, in all probability, show a substantial increase if Germany should pay only the conditional annuities. During the first fiscal year this account totaled about $30,000,000. The deposit of the German Government, according to the provisions of Article 9 of the Trust Agreement, is to be 50% of the amount kept by the creditor countries in the Annuity Trust Account. Hence, this deposit is about $15,000,000. The French Government Guarantee Fund is a deposit maintained to equalize any short payments. Under the present plan, France is entitled to a portion of the unconditional annuities in excess of her share of the *total* annuities. She has already secured a substantial part of her annuity payments by the commercialization and mobilization of these annuities. If, and this is more than a possibility, Germany pays only her unconditional annuities, some of the creditor countries would not be receiving their shares of the unconditional annuities. To safeguard the other creditors in such an emergency, France has made a deposit with the B. I. S.; this deposit will be increased in case postponement actually takes place.

The growth in short-term and sight deposits[9] has been very large. Such deposits are itemized under the following captions:

1. Central Banks for their own account.
2. Central Banks for the account of others.
3. Other depositors.

The deposits of the last group are so small that they can be ignored. Deposits of the central banks for their own accounts have increased during the fiscal year from $5,600,000 to $28,400,000, and for the account of others from zero to $16,000,000. These two deposits, representing approximately 77% of the total liabilities on March 31, 1931, had a maturity not to exceed six months. However, a very small part, approximately $2,000,000, or six-tenths of 1% of the total liabilities, had a maturity to exceed three months. The deposits of central banks for the account of others is presumably made for central governments; and it is this account which fluctuated a great deal between November and December, 1930, probably because of payments made by various governments to our government. On November 30, 1930, this account totaled about $20,000,000; by December 31st it had declined to $6,700,000. Debt payments, or out payments as they are called, are made to our government on December 15th. It would appear, therefore, that the

[7] *First Annual Report*, Annexes 3 and 4.

[8] According to the provisions of Article 4 (e) of the Trust Agreement. It is also provided there that these deposits may be maintained by central banks but no central bank maintained such a deposit during the first fiscal year of the B. I. S.

[9] These accounts bear interest. The rate is not made public.

various governments utilized a very substantial part of this account to make remittances to the United States government.[10]

The first balance sheet of the B. I. S. for May 31, 1930, showed assets of 302,700,000 Swiss francs, or approximately $59,200,000; by March 31, 1931, they had grown to 1,901,149,000 Swiss francs, or $385,000,000—an increase of 600%. Between May 31, 1930, and March 31, 1931, sight funds have increased almost six times, rediscountable bills and acceptances two and one-half times, time funds 124 times, sundry bills and investments seven times, and other investments nineteen times. The major *percentage* changes have been an increase in time funds from 2.3% of total assets on May 31, 1930, to 45.4% on March 31, 1931, and a decrease in rediscountable bills and acceptances from 74.8% to 32.1% of total assets between the same dates. The percentage changes in the other items have been negligible.

These assets are very liquid because of the nature of the Bank's deposits. Only 2% was invested in long-time and about 10% in intermediate-term investments.[11] Approximately 88 cents of every dollar of assets was, therefore, very liquid. This is sound banking because the deposits may be called upon at any time and the Bank must be in a position to meet these demands. Indeed, there is a greater moral obligation upon the B. I. S. to maintain liquidity than the ordinary commercial bank, because the failure on the part of the B. I. S. to meet its obligations would have a more disastrous effect than the failure of an ordinary commercial bank to do so. The Bank is not permitted to make advances to governments and, consequently, need not face the difficulty which has so frequently confronted central banks.

While the major aim of the B. I. S., like that of the Federal Reserve banks, is not to make profits, they are none the less welcome and are not to be completely ignored. The Bank made gross profits of 15,143,000 Swiss francs, or $3,000,000 during the first fiscal year; and after deducting expenses relating to preliminary organization and installation—a nonrecurring item—and costs of administration, the Bank made a net profit of 11,186,000 francs, approximately $2,000,000.[12] This is equivalent to 10% on the paid-up capital as of March 31, 1931. After crediting 5% of this sum to the Legal Reserve Fund, paying 6% on the paid-up capital, there remained 5,471,000 francs. Article 53 (d) of the statutes of the B. I. S. requires that 20% of this sum be credited to the Dividend Reserve Fund and 50% of this sum be credited to the General Reserve Fund. This leaves a balance of 2,168,000 francs to be distributed to the French Government Guarantee Fund and the German Government noninterest-bearing deposit previously mentioned. The balance is to be distributed to the various creditor governments in accordance with the minimum long-term deposits kept with it.

Trustee and Agency Operations

The objects of the Bank according to its statutes are "to promote the cooperation of central banks and to provide additional facilities for international

[10] *Monthly Review of the Midland Bank Limited*, October-November, 1930, p. 4. The process of making these transfers will be explained later.

[11] Practically all this was invested in Germany. The Bank as a matter of policy was employing from about $20,000,000 to $30,000,000 in medium-term credits. *First Annual Report*, p. 5 and Annexes 12a and 12b.

[12] *First Annual Report*, pp. 2, 3 and Annex 5.

financial operations; and to act as trustee or agent in regard to international financial settlements entrusted to it under agreements with the parties concerned." The trustee and agency operations of the B. I. S. have to do with the receipt, administration and distribution of the annuity payments, according to the provisions of the Plan adopted at The Hague in January, 1930, and acting as trustee and paying agent in connection with foreign-government bond issues.

The Agent General of Reparation Payments turned over to the B. I. S. on May 17, 1930, his undistributed balance equivalent to 182,691,764 reichsmarks; and after that date the B. I. S. assumed the management of the German Annuities.[13] Germany deposited with the B. I. S. its certificate of debt with coupons attached and the same procedure was followed in connection with the certificate issued by the German Railway Company for its annual contribution to the amount of 660 million reichsmarks *per annum*. Subsequently, Germany paid the equivalent of 1,368,000,000 reichsmarks to the B. I. S. which in turn distributed this sum to ten creditor countries. Some of these payments were in kind; and in connection with such payments B. I. S. has acted merely as a banker; it has assumed no responsibility for placing buyers in touch with sellers. By following this policy, it has not become involved in any complaints such as happened under the Dawes Plan. These payments are credited to the accounts of the various central banks which in turn make them available to the creditor countries. By the terms of The Hague agreement of January, 1930, the B. I. S. also receives annuities from Bulgaria, Hungary and Czechoslovakia to be dispersed to ten creditor countries. Owing to the delay in the ratification of certain of The Hague Agreements, the necessary trust agreements, though agreed upon by the B. I. S. and these three countries, have not come into being. None the less, Czechoslovakia deposited before March 31, 1931, the equivalent of 20,000,000 gold marks and this sum has been distributed to the creditor powers. Both Bulgaria and Hungary deposited sums in the B. I. S. but these had not been distributed on March 31, 1931.

The B. I. S. acts as paying agent of the trustees of the German External Loan of 1924. As such it receives and distributes the funds necessary for the service of this debt. It also acts as trustee and paying agent for the German Government International 5½% 1930 Loan. This loan with a nominal value of $351,000,000 was sold in nine countries by various investment bankers who placed the proceeds of the loan at the disposal of B. I. S. which in turn distributed the money to seven different countries, including Germany, in accordance with the Paris Agreement of June 10, 1930. This was a mobilization loan which enabled the creditor countries, especially France, to anticipate a portion of the future German annuities. This mobilization of the unconditional annuities was one of the unique features of the Young Plan. France, having been allocated a part of the unconditional annuities in excess of her share of the total annuity payments, is obliged to maintain a balance with the B. I. S. to safeguard the other creditors in event the postponable annuities are not paid. This deposit previously mentioned came into being with the mobilization of these annuities

[13] These operations are considered in the *First Annual Report*, pp. 7–10, Annexes 6a, 6b, 7, 8, 9a, 10, 11.

by the German External Loan of 1930. The Bank has done substantially similar work for Austria in connection with the Austrian Government International Loan issued in 1930 and having a nominal value of 439 million schillings or approximately $62,000,000.

Central Bank Collaboration

When the B. I. S. was proposed, central-bank cooperation was in the early stage of its development, although certain definite results had been achieved. The extension of contingent credits by the Federal Reserve banks to several central banks to assist them to stabilize their currencies on a gold basis, the earmarking of gold in one central bank for the account of another, investing foreign balances for each other, exchanging information and in general trying to coordinate their various policies—these had already been done. The B. I. S. supplies a focal point for such cooperation; it can be carried on regularly in an organized manner when hitherto it was quite personal and sporadic. Changes in personalities were quite important; presumably they will be less important. The B. I. S. is an organization charged with this specific task, whereas there was no such financial institution having this work as one of its functions. The Bank has followed the policy of having the heads of the central banks meet in Basle at frequent intervals to consider problems of mutual interest; in addition, they have met at the regular monthly meetings of the Bank. Technical experts from central banks have assembled at Basle at frequent intervals to consider questions of mutual interest. As the *Report* has it, "No week has passed without visits being received from several Central Bank representatives."[14] Such visits have been of assistance in promoting central-bank cooperation.

This central-bank collaboration has already achieved some definite results. One was the agreement on the part of the central banks to accept gold bars of the fineness of .900. This decision helped to remove a difficulty which became acute in 1930 when the Bank of France refused to accept gold inferior to a fineness of .995. At that time gold was being shipped to France from England and the Bank of England decided to pay out bars of standard fineness (.916) because its stock of fine gold had been depleted. Because the Bank of France would not accept gold of such fineness, the gold withdrawn from the Bank of England had to be re-refined before it was accepted by the Bank of France; and this re-refining cost made the foreign exchange rates between Paris and London fluctuate in accordance with the fluctuating charges made for re-refining the gold. Belgium and Switzerland followed the French policy in this matter and their foreign-exchange rates fluctuated in sympathy with the French franc rate. The action of the Bank of France provoked widespread criticism at the time and led to unfriendly feelings between France and England.[15] This difficulty has now been eliminated, thanks to the activities of the B. I. S.; and the free flow of the yellow metal for international financial transactions has been facilitated.[16] This result has, in a measure, reinforced the gold or gold-exchange standard and made the gold points of significance.

[14] P. 6.

[15] For a consideration of this policy see Paul Einzig, *The Fight for Financial Supremacy*, (London, Macmillan and Co., Limited, 1931), pp. 110–117; T. Balogh, "The Import of Gold into France" in the *Economic Journal*, September, 1930, pp. 442–460.

[16] *First Annual Report*, p. 7.

The B. I. S. has also secured the data necessary to enable central banks to avoid gold shipments and to utilize more effectively the foreign-exchange balances of the various central banks. In November, 1930, it was recommended that the central banks holding gold abroad should notify the B. I. S. of the amount and location, to permit the Bank to serve as a clearing house for banks having gold movements to make from one market to another, with the aim of avoiding these movements. Gold with a value of approximately $195,000,000 held abroad has been reported to the Bank, and the B. I. S. holds an additional unnamed sum in its own name for the account of central banks in London, New York and Paris.[17] This information, it is expected, will make it possible to avoid unnecessary gold shipments with the frequent fluctuations in short-time money rates in various financial centers.

Another step toward economizing the foreign-exchange reserves of the central banks has been started. A large number of central banks are permitted, by statute, to keep their entire reserves in the form of foreign exchange on gold or gold-exchange-standard countries. This has been one of the outstanding developments of the post-war period. It is estimated that total central-bank balances of foreign exchange are between two and three billion dollars invested largely in the New York and London short-term money markets.[18] When each central bank acts separately in this matter, the total so invested is bound to be in excess of the amount needed, if central banks act jointly through the B. I. S. At present a part of these reserves is kept with the B. I. S.; and this enables the various central banks, by means of book entries, to offset debits and credits without going through the foreign-exchange markets. This is probably especially true in connection with the annuity payments and the out-payments. According to the Young Plan, the B. I. S. informs Germany of the kinds of exchange it desires. This is then placed to the credit of the central banks for the account of others —central governments. These governments then pay their creditors—France and Italy pay Great Britain each month and on the 15th of December and June, Great Britain, France and Italy pay the United States. In the absence of the B. I. S., France and Italy would have to buy sterling exchange to be sent to the British Government and the British government in turn would be obliged to sell sterling and to buy dollars to be sent to the United States. This eliminates a number of cross dealings and the process of debt payments is facilitated because the Federal Reserve Bank of New York has correspondent relations with the B. I. S.

These definite results and the studies to secure others indicate, as it is expressed in the First Annual Report, "Central-banking collaboration provides a field in which there remains vast room for gradual progress."

Promoting International Financial Operations

The Bank is also expected to provide additional facilities for international financial operations. Some of the results mentioned in the preceding section may be considered as coming under that head. But the banking policy

[17] *First Annual Report*, p. 7: *Proceedings of the Academy of Political Science*, January, 1931, pp. 35–36.

[18] This is the opinion of Mr. Walter Stewart. See *Proceedings of the Academy of Political Science*, January, 1931, p. 40.

and operations of the B. I. S. have also helped to promote international financial operations. This is done by the investments of the B. I. S. Such investments must be liquid and made in countries having the gold or gold-exchange standard and they cannot be made in any financial center without the approval of the central-bank authorities. The B. I. S. has endeavored to move capital from markets where it is over-abundant to markets where it is relatively scarce. This procedure was followed in the autumn of 1930 when there was a severe depreciation in the reichsmark because of the widespread buying of foreign currencies, especially Swiss francs. This resulted in a drain on the reserves of the Reichsbank. At the same time, it made it difficult for the Swiss National Bank to control credit conditions due to the influx of gold. The B. I. S. made additional purchases of reichsmarks at the time and increased its investments there. This policy doubtless helped to bring the reichsmark back to its gold parity.[19]

The B. I. S. has also moved capital from low-interest markets to high-interest markets to help in leveling out interest rates; it has moved funds to help out currencies which are seasonally or temporarily weak; and it has made investments with the aim of promoting credit facilities in various centers.

[19] *Proceedings of the American Academy of Political Science*, January, 1931, p. 33; *The Midland Bank Bulletin* for October–November, 1930, pp. 6–7.

FREE AND FIXED PRICES DURING THE DEPRESSION[1]

By OSKAR MORGENSTERN

LONG before the War, the number of cartel organizations in Germany was increasing and including more and more important branches of industry. Generally the coming development was warmly received. It was expected that these monopolies or monopoly-like organizations would bring about a far-reaching stabilization of economic activity and the adjustment of the production machinery to the fluctuations of demand. In short, it was hoped that they would have a stabilizing effect upon general business. Also for the industries directly concerned, favorable effects were expected through an extensive rationalization whereby the weak and unfit enterprises of an industry would be eliminated in an orderly and effective manner.

Because it was assumed that cartels would exercise a stabilizing influence, we are justified in inquiring as to their actual rôle during cyclical changes of business. The favorable attitude toward cartels went so far, in fact, that certain compulsory cartels, for instance, potash and coal, were created, which in later years achieved great importance. Even socialistic critics were not united, since some were inclined to perceive in the cartels the beginnings of the very desirable planned economy. In America, on the contrary, as need not be explained here, the trusts and monopolies were not able to secure the friendly support of public opinion. Furthermore, attempts were made with all means to proceed against them without achieving even approximately the desired result. Lack of confidence existed; it may safely be asserted that after a period of unscrupulous exploitation of the monopoly position, a more careful policy would be followed in view of this public opinion. This anti-monopoly American opinion found in Germany little echo, and one may even say that it could not be understood. Until very recently this attitude prevailed, and under the influence of temporarily strengthened socialistic opinions immediately after the War the attitude toward cartels, "concerns," monopolies became very friendly indeed, primarily because they were viewed as institutional characteristics of a fully developed capitalistic organization, but one in the last stages of existence.

I

The great crisis of 1929 revealed a new aspect of combinations besides that which had already been seen in America and had been opposed so strongly. It appeared that unquestionably the duration and intensity of the cyclical depression was effectively and essentially unfavorably influenced by these organizations. It was worthy of remark that often the erstwhile and warmest defenders of these economic phenomena were those to stress this point, although the idea they presented was really not new. Only in Germany did it seem new, because the stabilizing and the leveling character of cartels had been particularly

[1] This is a translation from Mr. Morgenstern's original article in German.

emphasized in order to develop a favorable attitude. These stabilizing measures consisted chiefly in the evening up of production volume and, wherever possible, of a long-range planned price policy. The basic thought is admittedly incorrect. It should be possible for an enterprise to procure the products of cartels, particularly those of raw-material cartels, at stable prices. Fixed prices are, of course, welcome when the general price level is rising, but the same fixed prices during a period of depression, in which the level of price declines substantially, are felt to be restrictive.

It will be pertinent, therefore, to investigate the significance of the policy of cartels particularly that concerning prices, for prices must be adjusted to current production volumes. With changes in demand, two possibilities are open to an enterprise: First, choosing whether it will maintain the highest possible capacity, in which case, for instance, with a reduction in demand the price must be greatly lowered; or, secondly, whether it will hold the most uniform price possible, in which case it follows that the volume of production may be subjected to violent fluctuations. Obviously, conditions differ from industry to industry, as to whether these fluctuations of production volumes have important secondary effects or not, whether they affect large numbers of labor or not, *etc.* Monopolistic organizations commonly follow the latter method. When in the depression the general price system must undergo a revision, the different individual prices are elastic in varying degree. The more elastic a price is, so much more quickly apparently can the crisis in this respect be overcome. Every circumstance which opposes this adjustment of the price system, which makes prices inelastic, and which increases inertia must have the effect of lengthening the depression stage. If we assume that at the outbreak of a crisis, the price system P exists and the price level required to cure the depression is designated by P^1, P^1 should be reached by the shortest route. The shortest route cannot be followed, however, if these barriers prevent. It should be understood that we are dealing here with the price system—*i. e.*, of relative levels of prices—and not with the so-called general price level.

Crises and depressions are ordinarily marked by price declines. One need say nothing about the extent of the decline of the general price level. However, it should be observed that there is a considerable group of prices, particularly in Germany, which do not follow, or follow only in restricted measure, the downward movement of prices. Theoretically it might appear that the basis lies in the fact that demand has kept itself on the same level as before. In fact, since this does not appear to be the case, there is proof that the rigidity of these prices is to be traced to artificial measures. In other words, it is technically possible on the side of supply to fix a price; or, to put it in still another way, we are dealing here with monopolistic prices. For the sake of completeness, it should also be mentioned that in addition to this group of prices, there is also a second group which is likewise quite constant, in fact, often showing an upward tendency; namely, the so-called "political prices," for instance, taxes, fees and the like, prices which cannot be traced back on economic grounds to laws of supply and demand, but which, as the name indicates, arise out of noneconomic causes, for instance,

state expenditures. However, we must exclude these political prices, important though they may be, from our consideration, since they unnecessarily complicate our exposition.

II

The interaction of free and fixed prices has naturally aroused great interest among the producers whose prices have declined sharply and who must get material from cartels at continued high prices. This maladjustment has attracted much attention and, in fact, has brought demands for government relief.

In discussing the maladjustment of price movements in the two groups, it must also be pointed out that we do not mean the ordinary phenomenon which appears in both wholesale and retail prices; both these groups also move apart because wholesale prices tend to vary more quickly than retail prices. However, neither group can govern in monopolistic manner and it would be wrong to assume that either group is to be regarded as monopolistic. In the consideration of free and fixed prices we have before us, therefore, the double problem of (1) raw-material prices and (2) the so-called branded articles sold at retail. It may be questioned whether the importance of monopolizing certain wares in each group is similar and whether the same measures would be effective in both cases. Obviously it is to be expected that the raw-material monopolization is of far greater importance in scope than the control of certain retail commodities, for instance, soap, preserves, *etc.*, since raw materials constitute elements of cost for wide ranges of industry. One need only consider the widespread use of coal and iron.

Considering the inclination of German economy toward state intervention, it is not surprising that when the discrepancy between price movements became particularly noticeable, there was a call for government help. The demand was made upon the government that it should take suitable measures in order to bring about a lowering of costs, although at the same time for the general public the much more apparent rigidity of fixed "consumers' goods" prices played a greater rôle. The government appeared promptly with a plan and issued various ordinances which need not be given in detail at this time. Important steps were announced and the result was that temporarily in the summer of 1930 an actual, though small, price decline appeared, which as it later developed was essentially a seasonal movement. Though it was not originally noticed, it was followed by the usual autumnal rise. As an interesting sidelight attention may be called also to the fact that while an effort was being made to lower living costs, agricultural tariffs were again raised to higher figures. It is clear that one measure offsets the other, an indication, which one often sees, of how lacking is economic policy in fundamental soundness. The attempt also failed to carry on a special form of fight against fixed prices with a somewhat mystical declaration that the present price level must swing back to the price level of 1914, the belief evidently being that everything would be in the best order when we arrived at the pre-war level. This view contains a great fundamental error into which we cannot go at this time.

III

It is necessary to include certain general remarks concerning production costs. Fundamental is the distinction

between short-term and long-term cost accounting. Over a longer period, each entrepreneur must attempt to cover his total outlays. His offer price would be fixed not only according to the primary costs, that is, those costs which are incurred for a particular unit of production, but also according to the allocated portion of the general cost elements, which is called overhead. These supplementary costs constitute the first hindrance to the reduction of offer prices, although the experience of every entrepreneur teaches that temporarily, only the primary costs need to determine his offer which appears plainly, if one considers the temporary reaction toward a demand extension. Against the adjustment of production costs downward is an important restrictive factor in the inclination to figure with the actual out-of-pocket costs and not, as is correct, with the present or expected costs. In depression periods the earlier costs are always higher, which is explainable not only in terms of decline in value which the price decline brings with it. Another reason why the entrepreneur hesitates to reduce his prices lies in the fear that he will "spoil" the market and that he will suffer through the cheapening of the product because the freed purchasing power will not necessarily be directed toward his own product, but probably toward other products. Therefore, we observe the peculiar phenomenon that in a period of upward cyclical movement, genuine and free competition often exists in an industry which turns at the beginning of a depression period to open and secret agreements in order to stop the contrary movement. This is recognized above all for the textile industry of Lancastershire. If an industry lowers its prices importantly it may find that it does not secure the expected increase of demand, a result which can be explained only by the possibility that the public expects further price declines in the same industry and postpones any possible purchases for this later period. This attitude of buyers is often not rightly understood by entrepreneurs on which account the later though unavoidable price reductions are delayed. Moreover, only very progressive industries have actually carried through the radical measure in times of depression of transferring calculation from total costs to primary costs only. It must be emphasized, however, that those American firms which decided upon this radical step did not experience any unfavorable surprise.

Often price changes are not undertaken because it is assumed that a stable price extending over years is to the advantage of the buyer of a particular commodity. Such, for instance, was the case with railroad rails. It is questionable, however, whether the advantage of a stable price in times of high prices is not outweighed by the disadvantages in a depression.

Even more than the ordinary entrepreneur has the monopolist the possibility within wide limits of fixing the market price independently of the demand. With the reduction in demand it may appear to him more advantageous to reduce production volume rather than to lower prices; at least, this appears to be the common attitude. There exists further the undeniable tendency to exploit monopoly power in a period of depression more sharply than in a period of good times. This means, however, a perceptible aggravation of position for the later industrial links in the industrial chain. This aggravation occurs because frequently

a so-called "discrimination among demand" takes place, that is, prices of different levels are quoted to each prospective buyer according to his paying ability. This so-called "skimming" of demand takes place frequently today.

As subject to a half-monopolistic price structure we must mention in Europe also wages, whose rigidity rests on a special basis, as, for instance, Pigou has demonstrated at length. The rigidity of the wage structure owes its explanation to the fact that the working class fears the loss of the high wage level because in an upward movement following a depression its members are not competitively in a good position to restore the level. Since, however, wages, particularly in a basic industry, constitute one of the chief cost factors, the cartel-organized industries refer to the relative fixity of these cost factors, pointing out that their own prices are dependent upon the reduction of these prices. Accordingly an attempt is made to bring about a coupling of wages and price declines, as happened, for instance, in the so-called "Arbitration Award" at Oeynhausen. This provided that a wage decline in the same percentage must follow a decline in prices in the steel industry. Such a coupling is, however, superfluous if we deal with a true monopoly which has an assured monopoly income, against reduction of which other measures are also available.

IV

If we now turn to the investigation of the problem of fixed prices in more concrete terms, we must exclude discussion of so-called branded articles which are much too unimportant, at least in Germany, and make up only about 20% of retail turnover. The 10% decline in such prices, which the Government under threat of eliminating the present price protection has asked, would in total make very little. It is interesting, however, that branded articles which come from foreign countries, particularly from America, show a greater apparent sensitiveness than domestic prices, since the domestic firms leave the nominal price unchanged and instead have improved the weight or increased the quantity, thereby cutting prices indirectly. Here one meets for the first time the differences between nominal and effective prices, comparison of which is of great importance, if one goes into the problem earnestly.

As typical of the attitude of the great cartels, we may consider the German iron industry. Here conditions govern which differ considerably from the iron industry in other important industrial states and which were marked by an upward tendency in the trend of iron prices in Germany and even more in Austria, in marked contrast to the declining price level in England and America at the same time. So it came about that in the fall of 1930 German iron prices were 78% over the world market price (f.o.b. Antwerp, including freight and tariff in the calculations). Such a price difference is naturally possible only when international agreements exist. In foreign markets the cartel delivered, nevertheless, at the world market price; it was worthy of remark that the German iron buyers who later made deliveries to foreign countries received as a "drawback" a portion, or even the total, of these differences between domestic and foreign prices. Therein lay the tacit admission of the cartel that it was able to deliver at world market prices. There existed apparently a skimming of the inland market, in the sense that the general overhead was figured only on inland business.

This condition would be tolerable if another factor did not enter, in which at once the chief characteristic and the greatest disadvantage of rigid price structure for the business cycle is to be observed, namely, the development as the demand for steel declined of a system of rebates. In other words, the cartel offered its wares to certain buyers at lower than the nominal price. These rebates differed in size from case to case and were kept very secret. No one, not even the closest competitor, knew about them; each business man who bought iron, even if he was enjoying a rebate, was not clear whether or not he paid more than his competitor. Such a condition corresponds, as has already been pointed out, to a "skimming of the demand," that is, to a sharp exploitation of monopoly position, although it is often more than a mere skimming, since those occurrences are usually separated in time and place, while, on the contrary, here the occurrences are simultaneous. This process implies that no true market price exists, that is, a single price for prospective buyers; on the contrary here there is a different price for each buyer. It reminds one very much of the so-called "bootlegging" of war times. The competitive situation is not clear, because a certain irrationality usually governs in this particular field of economic life. But, how then is the adaptation of the individual enterprise to the changing conditions of depression going to be possible when each bit of clarity is extinguished and that precisely at the time in which new adaptation and the rebuilding of particular production apparatus makes up the sum and substance of business activity?

If objection is raised that the nominal price ceases to be the effective price on account of these rebates, it may be countered that this nominal price must be effective since the nominal price must at the same time be the upper effective price even when the turnover at this price is not substantial. Otherwise the attitude of the cartels would be wholly unintelligible, when they seek on their own side to reduce the fixed prices which raise their production costs, namely, wages. However, these would have been easier to lower if the cartels had previously lowered the nominal prices to the actual effective prices. It is obvious, therefore, that the cartels' announced price is not purely fictitious.

We need not dwell upon the importance of the relative excessive raising of prices of this one commodity to the refining industry and to the competitive conditions in the world market. The turnover at such fixed prices in the field of production makes up about 50% of the total turnover. Therefore, it becomes clear that the rigidity of the German price system is very great and its capacity for adapting itself to conditions in the world market is very much lowered. For foreign competition there exists the possibility of importing into Germany since, for instance, the iron industry has had to compete with the high inland iron prices while foreign competition has only had to jump tariff barriers. That this is disadvantageous in the long run to iron producers, who have nothing to fear from such immediate competition, is obvious.

V

Concerning possibilities in economic policy for remedying these conditions, the general principle still rules that a return to more economic methods is to be recommended. In this special case little can be done for branded articles of the retail trade. The real problem is furnished by the cartels for

raw and half-manufactured materials, since they are of superior importance. Here there are possibilities but one must proceed with the conviction that the evil is to be grasped at its root. One cannot hope to succeed by small-scale police methods, with orders and appeals to patriotic duty; it must be made clear that these cartels owe their existence solely to tariffs. Eliminate these tariffs, and with a single blow bring about relief. Likewise, one would take a very important step in international relations, since thereby the first step in the breaking down of tariff barriers would have occurred.

What the tariffs are to the cartels, unemployment insurance is to the unions. It is hardly possible to believe that one may in a day do away with unemployment insurance. Nor can one assert that this institution for social welfare could be done away with, but it cannot be denied that through other policies within the limits of this field very important relief for national economy, and thereby ultimately also for the workers, could be brought about. There are industries in which wages constitute 60% to 70% of the total cost, and when a large portion of this cost is to be regarded as unchangeable a particular enterprise finds it impossible to undertake the adjustments which are unavoidable.

Even though the original, and even present, ruling negative public opinion in the United States of America toward trusts and monopolies has been based on other grounds than those which now have appeared in Europe, it must be admitted that Americans have instinctively felt the great danger which threatens from these institutions. In fact the growth, or even overgrowth of monopolistic organizations, presents a very questionable element in present-day economic development. We have to do here with a phenomenon of long standing, which appears adapted to bring about the elimination of special portions of the capitalistic system. In its place it promises to substitute not a more carefully planned economic organization, as hoped, but rather one which seems to foster public welfare in much smaller measure. A famous economist has provided a book on this subject with the subtitle, "A Study of the Causes of Poverty of Nations." If this is perhaps exaggerated, one may say that these new economic bodies have as yet given little proof that people fare better with them than without them.

If the question is also asked as to whether wage decline must precede price decline, as frequently believed, it appears from the above that this rule cannot be maintained unqualifiedly. It may with more assurance be accepted that the efforts of an industry to reduce costs succeed if in the several industries simultaneously prices are reduced drastically. Unfortunately, beyond this—I speak now of Europe—is the state with its fixed system of taxes and duties, with its constantly rising expenditures and its inexhaustible demands upon the nation. Here even the very beginnings are to be made, but it appears that political interests are all too strong to be able to reckon in the foreseeable future with the change in attitude. Science can do little more in the above field than to show where the root of the evil lies and what must be done to bring about improvement. But to me it appears that this little is much, for it shift upon those who have the power a great responsibility that they do the right thing. Failure to do it is ascribable either to ignorance or to malignant purpose.

THE GEOGRAPHICAL APPROACH TO THE STUDY OF SOME BUSINESS PROBLEMS

By L. DUDLEY STAMP

PROBABLY no subject that comes within the purview of a school or college curriculum has changed so fundamentally as geography within the last twenty-five years. It is essential to commence any consideration of the place of geography in the study of business problems by making this assertion for the simple reason that the new geography must be accorded a consideration which was most certainly not due to the old.

In textbooks of a generation ago—books which are unfortunately still printed and sold in their thousands—geography was defined as "a description of the world and its inhabitants." The "description" consisted in imparting, with the help of amazing variations in typography, such information as "Asia is the largest of the continents, with an area of 11,000,000 square miles, and stretches 6,000 miles from east to west and 6,000 miles from north to south." At a later stage one might learn that coffee was produced by Brazil, Venezuela, Colombia, Ecuador, Costa Rica, Java, South India, Arabia, *etc.* (and woe betide the unfortunate learner who forgot one in the middle of the list!), or the fact that Portugal, capital Lisbon on the Tagus, was "noted for" port wine, cork, olives, sardines and other oddments.

To the commercial man with an import or export business there was often some use in having stored in his memory a mental list of those countries (not forgetting their capitals and the rivers on which those capitals happened to be situated) producing the raw materials in which he was interested or which purchased those manufactures that he might have to sell. So "commercial geography" found a place in the catalogue of hate of the school boy and the catalogue of possibly useful subjects in the mind of parent or employer.

But it is not with lifeless dreary geography of this sort that we are here concerned. The dawn of modern geography came with the realization that the innumerable but isolated facts which formed the subject matter of the old descriptive geography were, in reality, the result or outcome of a few comparatively simple causes. So it became imperative to seek out, to classify and to study these causes, and to deal later with their effects. Thus modern geography is sometimes called "causal" geography—a descriptive designation far from ideal because of its easy confusion with "casual." It is concerned with the study of the earth as the environment of man: with the influence of that environment on the life and activities of man, and of the reciprocal influence of man on his environment. On the ground that such a study is of fundamental importance, it is often urged that geography should be a key subject in any system of education. Such a plea is really unnecessary: a world now closely knit by ties economic and social from which there is no escape and no independence is already geographically and economically minded. What is of importance is that we should bring the scientific methods of geography to play their part in the unraveling of current prob-

lems and that the instillation of such mental habits should start early in life.

I

If modern geography is the study of the earth as the environment of man, obviously the first question is what are the factors which make up that environment, and in what order should they be studied?

One unalterable factor is position. No endeavor of man can change the fact that New Zealand lies on the far side of the world from Europe, remote from all the land masses of the world. Every improvement in means of communication may do something to conquer this remoteness, but it remains as a positive factor to be considered in any development of the country. At present, for example, New Zealand has vast water-power resources, but for the very simple reason that the country is a thousand miles from the nearest land mass—Australia—the power development must remain a domestic affair. There cannot be an export of power as there is, for example, from Sweden to Denmark.

The second factor of fundamental importance is topography or physical structure. Switzerland is a country of mountains: the development of agriculture and industry, settlement and lines of communication must of necessity be influenced by, one might almost say controlled by, this fact. On the other hand nothing can alter the essential physical character of the Prairie Provinces or the Middle West, and it would be difficult to deny that the gently rolling nature of so much of the country facilitated railroad development and rendered possible the evolution of large-scale methods of farming characteristic of the area. At the present time it is, again, the physical features of the ground which determine areas where irrigation, from such sources as the Bow River, is, or is not, possible.

But surface features are in reality the reflection of the underlying geological structure which thus becomes the third factor. None can alter what Nature has arranged: it is impossible to find a coalfield where one has not been placed by Nature, or to have luck with a wildcat well where no oil exists. The economic development of a region must thus depend to a very considerable extent on its structural geology.

Of equal importance is the fourth factor—climate. Climate is usually defined as the average state of the weather, and the influence exerted by weather and climate on the life and activities of man is so constant and so all-embracing that it passes almost unnoticed. The clothes we wear, the materials of which they are made, the type of our dwellings, the food we eat, the journeys we make for a "change of air" are just a few of the everyday things coming under the influence of changes in weather and climate. But of even greater importance is the climatic control of the production of raw materials and foodstuffs. Why else should there be a "cotton belt," or a citrus export from California and Florida? Climate, indeed, plays such a dominant part in determining what a country can or cannot produce that it is sufficient reason for the fact that the United States can never be economically independent: still less can Russia, whatever success attends the five-year plan. To take one commodity alone, climate effectively prevents the production of rubber in either. Of such importance is climate that it is customary to divide the world into about a dozen "major

climatic regions." Any raw material of vegetable origin is found to be restricted to one or certain ones of these regions. The actual areas within a given region where a certain crop may be produced are then dependent upon economic and other factors, but the initial determination is geographic.

Actually, the three factors—topography, structure, and climate—combine in the first place to make their influence felt in determining the character of the soil and, through the soil, the natural vegetation. Thus the major climatic regions are also major vegetation regions, each with its characteristic covering of forest, grass, or scrub, *etc.* With the activities of man each in its turn becomes the seat of cultivation of its appropriate artificial vegetation or crops.

Finally, the sixth factor of the geographical environment is the animal life—determined in large measure by the natural vegetation. The agility of the monkey is adapted for life in the forest; it would be of little avail in the wide open prairies or the grasslands of Africa where speed in flight is the hope for escape of the antelope from the lion. In turn, animals domesticated by man have their range determined by the same factors. The great wool-exporting countries of the world are the temperate grasslands of the Southern Hemisphere, all enjoying a similar type of climate. The future economic development of northern Canada, as already shown in parts of Alaska, depends on the utilization of such animals as the reindeer and caribou adapted to the climatic conditions of the far North.

Man is himself an animal and in this sense is, to a considerable extent, the creature of his environment. When Modern Geography under the guidance of Ratzel in Germany and of E. C. Semple in America formulated these fundamental laws and determined a logical method of study, there is no doubt that the new wine went to the heads of the earnest pioneer missionaries. They conceived the idea of "Geographical Control" and some went so far as to aver that the control of the environment was so great that, given the same setting of the stage, the progress of history would be the same if it happened all over again. But they ignored the reciprocal influence of man on his environment.

II

Modern progress is in large measure man's endeavor to overcome his environment. Human influence on the physical features of the environment tends, on the whole, to be slight. The cutting of a tunnel through mountains, the draining of a swamp and the reclamation of an area such as the Zuider Zee are major cases. The influence on the structure is negligible unless here may be included the treatment of soils by manuring. It is small wonder that the modern geographer works inevitably with a *physical* map (often with a geological map in the background) as a portrayal of the most stable factors of the environment. Man's power to overcome the climatic disadvantages of his environment is much greater. It is true that methods of creating rain are still to be discovered, but irrigation in the fields and humidifiers in the factories are partial solutions of deficiencies in rainfall or atmospheric moisture. Central heating and cold storage are similarly partial answers to difficulties caused by temperature.

The reciprocal influence on the vegetation of the world is so great that one is

apt to ignore the unalterable features of vegetation. The pygmies of the African forest or the Amazonian Indians are largely creatures of their vegetational environment, but civilized man is able to clear and replant, to breed and transplant to such a degree that, to take one present-day example, the value of a New Zealand farm largely depends on the area of English pasture grasses.

The control over animal life seems even greater. The larger wild animals have been, to a great extent, exterminated, but the lesser remain often as a constant thorn in the side. Even amongst the larger there is the lesson of the introduction of rabbits into Australia. But again, if yellow fever and malaria have been largely conquered in the Canal Zone, tsetse fly belts remain in Africa as a hindrance to human and economic development and influenza in 1918–19 took a larger toll of lives in India than twenty-five years of plague.

It will be seen that the whole aim of modern geography is to build up in logical sequence a scientifically accurate picture of the stage on which the drama of human life is acted. Examples might be multiplied of the inevitable consequences of ignoring this method. The early attempts at rubber cultivation in the neighborhood of Calcutta and Sir George Baker's wheatfields and oatfields in Ceylon both flouted climatic conditions; the innumerable harbor works which have failed because of inadequate study of local conditions; the destruction of valuable iron bridges and the buckling of railway lines in tropical countries through inadequate knowledge of temperature; still more commonly the shipment of unsuitable goods to foreign ports are obvious examples of incredible waste which might have been obviated often by a simple knowledge of geographical conditions.

III

It may be said that there are two methods of approach in the study of geography—two which are complementary rather than opposed. One is the study of the world as a whole; the other is the study of individual units.

In the first case, in the study of the world as a whole one considers in order the position of land masses and oceans and the consequent natural routes; then the physical and geological build; then climatic conditions and the division into climatic and vegetation belts and finally the human and economic conditions.

In the second case the same order is followed, but the consideration becomes one of detail rather than of broad principles.

It has been necessary to give this somewhat lengthy introduction on the aims and methods of modern geography in order that the character of the tools may be understood before they are applied to the solution of specific economic or business problems. There are many modern books which elaborate the subject and its methods along these lines[1] and it remains now to select a few examples of problems and the principles involved in solution.

IV

We may select four groups of business problems and apply the geographical method of approach:

(1) The extension of existing businesses.

(2) The establishment of new businesses.

(3) The investment of capital.

[1] Such, for example, as the author's "Intermediate Commercial Geography." New York: Longmans, Green & Co.

(4) Communications and the centrality of markets.

The Extension of Existing Businesses. Perhaps foremost in this group of problems come the search for new, cheaper or more regular sources of supply of raw material and the search for new markets for finished products.

Let us suppose that a manufacturer has in mind the exploitation either as a source of raw material or as a market a country X with which he has not previously been concerned. It may be urged that the preliminary to any such expansion will be a study of economic conditions. Such a study would include the value of import and export trade including trends in recent development. Here it is that the economic and geographic approaches are invaluable in supplementing one another. The position may be summarized in a sentence. The economist analyzes the existing economic development, tracing its development and so determining possible trends: the geographer, by a study of physical settings, analyzes potentialities. A further point may be urged: whereas the economist must of necessity treat of a political unit for which he has figures and facts available, the geographer is careful to consider the diverse physical or climatic regions which may be included within that political unit. In this sense commercial geography has been called "geo-economics"—economics with a very definite space relationship. As a concrete example it is really impossible to talk about the "present economic development of Brazil" because one is including together the incredibly backward and inaccessible Amazonian forests with the highly civilized and highly developed coffee lands of Rio and Santos.

A particularly instructive example of current interest is afforded by the two equatorial islands of the Dutch East Indies—Java and Sumatra. Java is densely populated (with over 37,000,000 people), highly productive, with a large import and export trade and "obviously" a highly desirable market. Sumatra is comparatively thinly populated, relatively unproductive (at least until recently) and, with a much smaller foreign trade, is "obviously" a less desirable market. A geographical comparison shows that both islands are in the same climatic belt and, apart from differences in soil fertility, capable of producing the same crops. Java is so densely populated as to have reached saturation, so that population must even decrease in certain areas. It is comparatively small, very little land remains for development, and there is practically no hope of extending areas under cash or export crops. Sumatra is larger, has unlimited land for development, and native producers and Javanese immigrants have, within the last few years, forced up the export of staple commodities by leaps and bounds and made lightning fortunes at the same time. True, an economic analysis shows the trend of events perfectly well, but *it is too late to get in on the ground floor;* only a geographic analysis some years ago made that possible for certain firms which knew the method.

A few examples may be given of the geographic control of the production of certain raw materials. Running round the earth and stretching roughly five to eight degrees on either side of the equator is a climatic belt, called by geographers the "equatorial climatic region." Here, contrary to the popular idea, it never gets so hot as it does in New York but it is constantly hot and moist throughout the year—the thermometer never varying more than a few

degrees on either side of 80° F. It is also a belt of constant rain—there is no dry season and few days pass without a good downpour. If one follows the course of the equator around the globe one finds that this climatic belt must occur in South America, Central Africa, and Southeastern Asia. A crop which flourishes in *one* of the areas will, unless prone to disease, flourish in any other. The conditions are those required for rubber and so the rubber tree, a native of South America, now gives the bulk of the world's rubber production in the equatorial lands of Southeastern Asia. The rubber tree will not grow outside this belt; it was unsound geographically to plant it at Calcutta, and the sound geographical reasoning of Henry Ford in establishing plantations at Para was frustrated only by economic conditions. Twenty-five years ago cocoa was associated essentially and almost exclusively with the margins of this belt in Central and South America—now two-thirds of the world's supply comes from the corresponding geographical region in Africa and has brought fortunes to the bold pioneers who put geographical theory to the test. Still another crop of the same belt has only recently spread from its African home to Southeastern Asia. This is the Guinea oil-palm which, it may be prophesied, is still destined to bring good fortune to present neglected tracts of South America. In this connection it is of the utmost importance to realize that experience gained in one part of a major climatic region may be applied directly in other parts. The Imperial College of Tropical Agriculture in Trinidad serves the whole of the British tropical colonies. As a further example of the same sort, the future extension northwards of Canadian wheatlands (when required) will depend upon the breeding of a wheat which will mature more quickly than existing types: any success obtained in this respect in Canada will be automatically applicable to Russia—in the similar climatic belt in Siberia.

These examples concern big business and major dealings. But there are similar lessons to be learned on a smaller scale. Parts of Manchuria have a climate almost exactly like that of New York. The severe winter in each case renders essential similar protection for water-supply pipes. On the other hand, the absence of severe frosts in England allows the English builder to place unprotected water-supply pipes wandering about just under the roof of a domestic dwelling. Thus the English plumber who worked according to experience gained at home would be sadly at fault in Manchuria, whereas the New Yorker would probably work on precisely correct lines.

In the near future the whole of Northern and Central China with its New England climate will awaken to the warmth-retaining virtues of woolen clothing, as opposed to padded cotton garments, and there will appear the greatest—as yet untouched—market for woolen goods that the world has ever known.

Japan is troubled with mosquitoes, and Japan manufactures the most efficient mosquito coils which, when lighted and placed under a table or chair, produce an aroma reminiscent of eastern temples. The actual market for the product is roughly the Far East; the potential market is limited geographically only by the distribution of mosquitoes and midges.

In all tropical countries long iced drinks are the rule. The moisture from the humid atmosphere condenses on the outside of the glass and runs down—to

the ruination of the furniture. So a little saucer is provided. A few years ago a Birmingham manufacturer worked out those countries where heat and humidity coexisted and had little saucers made with the appropriate local arms or legends. He went around the world with them, and they are now the major part of a very prosperous one-man business. He might perhaps have added a 50% increase if he had remembered those countries where flies are so numerous that they willingly commit suicide unless the drink is protected by a cover.

The Establishment of New Businesses. Under this heading may be included the siting of new factories. Here the smaller manufacturer tends to be extraordinarily sheep-like. It is true that in selecting a locality which has already been chosen by a number of others such advantages as a suitable labor supply may be dominant considerations, but the position in new countries and undeveloped areas is often different. An interesting example is afforded by South Africa. Europe, through the Dutch, commenced the settlement and conquest of South Africa from the south-west—from Cape Town. Cape Town remains the natural gateway; in the vicinity are the highly developed farm lands and an old, well-established population. Surely development and population prove Cape Town a suitable locality for a new factory supplying South Africa. If, however, a readily accessible coal supply and a preexisting labor center were regarded as essentials, there are Johannesburg and the whole range of the Rand towns. Yet Ford Motors, and later General Motors, chose the comparatively little-known Port Elizabeth, exercising a thoroughly sound geographical analysis of the position. Cheap land (compare Cape Town on its restricted peninsula) on the seaboard (for ready import of materials), rail communication along the coast to the west and by a comparatively easy route up on to the plateau to Johannesburg (contrast Cape Town with one tortuous and difficult approach only and a greater distance to Johannesburg), the possibility of easy road communications, and a rapidly developing agricultural area of prosperous citrus farmers are the great features of Port Elizabeth. In other words the *possibilities* of the situation geographically outweighed the established economic advantages of the older centers. It is interesting to note that the location of all Ford works is capable of a very critical examination from the geographical standpoint.

It may be urged that such commonsense matters are always considered. Such is very far from being the case. More often the location of new works is determined by a series of accidents. Some years ago a retired chemist living in a quiet village experimented in a laboratory in his garden. He evolved a process of potential value. A small factory was built to try it out. It was successful. Land was bought and a large works established. The venture is a failure. Two miles from a railway for coal supply, four miles from the nearest town from which the labor is drawn, the main result of the factory is a 50% decrease in value of the residential property in the neighborhood.

Investment of Capital.—The big considerations so far dealt with may perhaps be the concern of the few, yet in reality they affect the whole investing public. The company which has scientifically considered *all* the factors involved in the establishment or the extension of its business is the one which will repay the support of the investor.

Nothing teaches like bitter experience. The writer is old enough to have been brought up on a geography which consisted of learning off lists of names and products and which had little relation to everyday life. He invested some money in an oil company, being attracted by the honesty of the company in publishing a map of its properties. The map showed the areas to be exploited *between* strips of land already proved by other companies. Of course not a cent of that money has ever been recovered, for it is the first and simplest principle in the study of oil-bearing strata that the oil normally rises to below the crests of arches or anticlines in the rock, whilst the salt water sinks to the intervening hollows—in other words, the company with the writer's money simply got the salt water.

Some years ago a professor of geography realized that one day, to permit the natural expansion of Sydney (N. S. W.), a bridge would have to be built across part of the harbor and that land on the far side would rise enormously in value. He bought land—it remained derelict and unused until he left. But the bridge is complete and open to traffic this year, the geographer's prediction fulfilled to the hilt and the present owner reaping a considerable fortune.

Communication and the Centrality of Markets.—Although it has been urged that one, if not the greatest, conception of the modern geographer is of the division of the world into major climatic regions, it may not have been made equally clear that each country can be similarly treated and divided into "natural regions." Each natural region has its own characteristic physical features, structure, climate, vegetation, agricultural, human and economic development.

Such being the case, two things follow:

(a) There will be comparatively little trade between regions of similar character.
(b) There will be a natural exchange of products or commodities between regions of different character.

This consideration affords an opportunity for distinguishing two types of towns. There are those which act as collecting or distributing centers for a single region. As markets the requirements of such towns are limited in the main to those commodities not produced within the region.

There are, on the other hand, the towns which lie on or near the borders of different regions. Not only do they act as collecting or distributing centers for more than one type of region, but they are the natural channels of exchange, material or otherwise, between the peoples of contrasted areas. In the older countries towns so situated have long proved the importance of geographical situation. There is Leipzig on the borders of the north German lowlands, the Saxony coalfield and industrial area and the mountains of Central Europe where the medieval fair and the modern trade fair are symbolical of the commerce consequent upon position. Frequently physical features control communications to such an extent that the exact location is thereby fixed. New York is, in essence, the exchange station between the Old World and that part of the New reached via the Hudson-Mohawk Gap. A little over a hundred years ago the site of the greatest city of India—Calcutta—was a fever-stricken marsh. But the maritime nation which developed the foreign trade of India selected the obvious outlet of the richest lands of the Ganges basin and so a "frontier town" to the outside world.

These considerations assume the greatest importance in the world today. The fortunes of the United Fruit Company are built up on the need for exchange between the tropical lands of the West Indies and Central America with temperate United States; the appearance of Canadian National Steamships in the same sphere is the reflection of a similar relationship between temperate Canada and the tropical West Indies.

Whatever the economic prosperity of the Argentine, there is on geographical grounds alone little possibility of a *reciprocal* trade developing between Argentina and the United States so strong as that between Argentina and Britain. For Argentina and the United States are largely within the same geographic regions and hence have similar products, at least as far as raw materials and primary foodstuffs are concerned.

But the whole future of South America is in the making. Brazil is equatorial and tropical, Argentina is temperate. Both are agricultural producers: Chile has minerals and the nitrate for fertilizer but a need for the products of both Argentina and Brazil. The development of a huge trade between the Argentine, Brazilian and Chilean republics of South America is thus inevitable; the effect on the relative importance of lines of communication and focal centers is something worthy of the closest attention by every business man and investor.

V

It is impossible, in the brief space afforded by this article, to do more than indicate the lines along which the geographical approach may be of value in present-day business. Modern geography is in reality a mode of thought, and it is not so much perhaps for the business man of today to sit down with weighty tomes (though he may with advantage use such as Chisholm's Handbook of Commercial Geography) to study geography as it is for him to encourage the study of the subject in schools and colleges and so to absorb into his business new blood—the young men and women to whom these lines of thought are natural. At the same time the place of the economic geographer in the research and forecasting staff or the sales and statistical investigation bureau is obvious.

DISTRIBUTION PROBLEMS OF THE OIL INDUSTRY. II

By SIDNEY A. SWENSRUD

Present-day Marketing Problems: Prices

The foregoing discussion[1] may serve to explain and account for some of the developments in the marketing end of the oil industry that have brought it to its present state. The problems which confront it today revolve around prices, margins and costs, quality of products, and merchandising trends.

For few commodities are prices probably less understood than for gasoline. People express great amazement that the price of gasoline at one point should differ sharply from that at a nearby point, and they see something mysterious in the fact that practically all major companies in the same locality raise or lower their posted prices simultaneously.

The general level of gasoline prices, of course, is fundamentally determined by the interaction of gasoline demand and crude-oil supply. In a very narrow and short-term sense, the price of gasoline reacts to the supply-and-demand factors of gasoline alone, but the rapidity with which crude oil can be converted into gasoline makes crude oil the dominant supply factor. The facts bear out this conclusion, for over a period of the last twelve years there never has been a major change in the trend of wholesale gasoline prices that was not followed shortly by a change in the same direction in crude oil. Changes in crude-oil prices *follow* changes in wholesale gasoline prices rather than *precede* them because the wholesale gasoline market is an extremely sensitive one, whereas the market for crude oil is a rather sluggish one, owing to the physical necessity, in general, of pipe-line connections with a specific buyer. It is not a market in which buyers and sellers ordinarily can meet openly on equal terms and engage in that "higgling and bargaining" which are the essentials of a market in which the forces of supply and demand can rapidly and continuously be balanced in terms of price. This simply means that the wholesale gasoline price, being the result of constant individual sales made in eighth-cent-per-gallon variations, is much more sensitive and tends to reflect sooner those forces of supply and demand which ultimately effect crude-oil prices.

The close correspondence of retail gasoline prices and price changes among leading companies in the same locality is the result of economic necessity and not of collusion. Gasoline, to be sure, is bought to a considerable extent on the basis of brand, but the normally small differences in quality between the comparable products of good companies have made the customer, as a general rule, unwilling to pay more for his preferred brand than for the comparable brand of another company. When a price reduction is made by one leading company, no other representative company can afford not to cut, unless it is willing to risk losing much of its business. Likewise on the upside—suppose a leading company raises its price one or two cents per gallon.

[1] See HARVARD BUSINESS REVIEW for July, 1931.

In this case if its competitors do not promptly follow its lead, it has no option but to return to the former price level or lose business. These factors practically compel all companies having reasonably comparable products and service to sell at the same retail price. The same thing is true of most other products we buy, with the difference, however, that a large portion of the public buys gasoline very frequently and will readily drive a little out of the way to secure any price advantage. Then too, gasoline is the principal product sold at a gasoline station, and the conspicuous posting of prices, especially if they are below the prevailing level, gives almost unparalleled opportunities for price comparison by the customer. These factors simply narrow down the time limit available in which to adjust prices to prevailing levels. The result is what may be called a follow-the-leader price custom among oil companies marketing comparable products on a similar basis in the same locality. Obviously, since no price increase could be effective without the support of the company with the greatest representation, it tends to become the custom for such a company to be the leader in posting price changes in its territory and for other companies to follow those changes almost instantly, so long as they seem reasonably sound, with no need of agreements or collusion.

It must not be inferred from this, however, that any company, large or small, has power to maintain prices that are not sound. In any competitive industry the margin between the delivered cost and the effective retail price can never for long be much more than the typical cost of marketing through the existing channels of distribution. Whenever the posted price of gasoline exceeds the delivered cost by more than this typical marketing cost, either that posted price must be reduced or it soon will be nullified by commercial discounts, secret rebates and price cuts, or open price cuts by independent jobbers and tank-car service-station operators—the variations in the method are many, but the effect of all is the same; namely, a reduction in the effective prices realized.

In this connection the activities of the so-called tank-car service station deserve particular attention. The number of outlets of this type has grown very noticeably in the past two years. The entrepreneur typically gets a service-station location at the juncture of a railroad and a good traffic artery; he then puts up a station, usually an inexpensive one, and enough storage capacity to receive deliveries in tank cars. He buys his gasoline direct from a refiner—usually one who has no other marketing interest in that territory but who has excess gasoline to dispose of. With this set-up he begins business, usually at a price from one to three cents below the prevailing posted level. If, as frequently happens, he gets a good gallonage, he enjoys some success—even though his margin is small, his expense of distribution per unit also is small. He capitalizes at once not only the over-expanded marketing condition of the industry which has made for generally wide margins, but also the immediate oversupply of gasoline which enables him to buy cheaply. Not infrequently also he poses as the friend of the people who will serve them by selling at lower prices. When such a marketer is successful in obtaining a large gallonage at cut prices, the companies adversely affected usually meet his prices; then, of course, his business wanes, for it

rests primarily upon price rather than upon quality of products or service. For the most part he may be considered, therefore, a mere opportunist who steps in and takes a profit when the margin between wholesale cost and retail price becomes too great. Nevertheless, in some respects he challenges the validity of the ordinary method and cost of marketing gasoline with its resulting wide margin per gallon. It obviously is cheaper to sell gasoline in large quantities at one location than in small quantities at a dozen locations. How much extra expense for the latter type of distribution is warranted will depend upon how much more the public is willing to pay for the advantage of buying its gasoline at scattered convenient locations than at a few centralized points. Most customers undoubtedly will be willing to pay something more, for gasoline has become a convenience goods and the customer's very ability to go far out of his way to buy gasoline sometimes is conditioned by the danger of running out in the meantime.

The evidence of actual experience would seem to indicate that in normal times relatively few customers will sacrifice much in the way of convenience, quality of product or service for a saving of one cent per gallon, but that when the difference begins to be as great as two cents or more per gallon their loyalty is far less secure.

Another form of price cutting is the granting of commercial discounts at service stations, a practice now prevailing in most sections. Commercial customers in all parts of the country are given a price for tank-wagon deliveries well below the retail service-station price—usually they get the same discount as that allowed to the ordinary dealer. The actual "tank-wagon" price of one or two cents below the service-station price, formerly so frequently quoted, today is little more than a basis for other prices, for the only sales made at the tank-wagon price itself are small tank-truck deliveries to a few farmers or other consumers who cannot meet the requirements of classification as "commercial" users. The desire of many fleet owners, entitled to a commercial price on tank-truck deliveries, to secure deliveries direct at service stations instead has, of course, exerted a great pressure to extend commercial discounts to the service stations. When that is done, however, the inevitable result, working through a vicious circle of sequences, invariably is the gradual extension of such discounts until almost anyone can obtain them. The net result, therefore, usually is an effective reduction in the retail price and a nullification of the "posted" price to all except those innocent purchasers who naively pay the full price. It is simply another of the effects of a too-wide margin.

Marketing Costs

Under these conditions the importance of marketing costs undoubtedly will become increasingly important. The pressure of crude production is forcing more and more companies to push their product upon the market at constantly increasing marketing expense per gallon. At the same time, the opportunity of obtaining a wide margin per gallon between delivered cost and retail price is being circumscribed more and more by price cutting, some of which has a basis in lower marketing expense.

Some comparisons, recently made by the writer, of the costs of marketing at retail service stations with those in other retail lines indicate that the cost

of retailing gasoline and oil probably exceeds that of almost any other ordinary retail trade. The cost of rent alone in the service-station business, including therein all actual rental paid and interest, taxes and depreciation on land, buildings and equipment, probably averages for company-operated service stations throughout the country not less than two cents per gallon; as a percentage of total net sales this amounts to from eight to ten *per cent* or more, which easily exceeds the similar rent expense of any ordinary retail trade. A station, to get any decent gallonage today, ordinarily must be located on a good traffic street and it must have a good frontage on the street, together with attractive and convenient facilities which must be especially designed for the purpose and which, unlike the quarters of most retail establishments, cannot be converted to use for other retail purposes. That frontage is expensive, and so are the facilities, but this does not deter other companies, pressed for gallonage, and so they also build stations, with a consequent dilution of the average gallonage for all outlets and a resulting high average marketing cost per gallon.

The marketing expense per gallon at a service station increases very rapidly as the gallonage decreases, for a large part of the expense is fixed; even the largest of the variable items, salaries, usually cannot be reduced in proportion to a serious decline in sales. Since the margin per gallon is practically constant as between stations of different volume, it can readily be seen that the reduction in profit is entirely out of proportion to a reduction in sales. Actual computations, for instance, show that if the sales at a salary-operated station, doing say 12,000 gallons per month, are reduced by 33 *per cent*, the reduction in marketing profit is about 80 *per cent*—or, to reverse the illustration, if at a salary-operated station, monthly sales of 8,000 gallons could be increased to 12,000 gallons, the marketing profit would be increased about five times. This is illustrated by the figures given in Table I which, while hypothetical, probably are reasonably representative of average situations.

The seriousness of dilution in its effect upon unit expense and profits, therefore, can readily be appreciated, especially in view of the fact that for all company-operated service stations in the United States the average monthly gasoline sales probably are not even 8,000 gallons per month. One of the most serious problems in this connection is the dilution of a company's service-station gallonage by its own dealers. Obviously, for a company to set up dealers in a locality where it has its own service stations involves some dilution of its service-station sales. The dilemma, of course, is that if such dealers' outlets are not taken, another oil company will take them, and at least a part of the dilution will take place. Such, at least, is the reasoning of most marketing executives. The predominating fact, of course, is that for most companies the struggle for gallonage by itself thus far has outweighed consideration of the profitableness of individual outlets. In most companies, moreover, little information is obtained or studied regarding the profit of individual outlets. Since there is, of course, a general realization of increasing costs, it is not strange that each company should do its utmost to secure a greater share of the business through its outlets by means of improved products, effective advertising of its brands and better service.

TABLE I. COMPARATIVE MONTHLY OPERATING STATEMENTS OF SERVICE STATIONS WITH MONTHLY GASOLINE SALES OF 8,000 AND 12,000 GALLONS

	8,000 Gal. per Mo. Service Station		12,000 Gal. per Mo. Service Station	
Sales				
Ordinary gasoline	5,600 gal. @ 0.16	$896	8,400 gal. @ 0.16	$1,344
Premium gasoline	2,400 gal. @ 0.19	456	3,600 gal. @ 0.19	684
Ordinary motor oil	100 gal. @ 1.00	100	150 gal. @ 1.00	150
Premium motor oil	60 gal. @ 1.40	84	90 gal. @ 1.40	126
Misc. sales alcohol, greases, *etc.*		15		25
Total sales		$1,551		$2,329
Cost of Sales (Delivered at service station)				
Ordinary gasoline	5,600 gal. @ 0.10	$560	8,400 gal. @ 0.10	$ 840
Premium gasoline	2,400 gal. @ 0.115	276	3,600 gal. @ 0.115	414
Ordinary motor oil	100 gal. @ 0.35	35	150 gal. @ 0.35	52
Premium motor oil	60 gal. @ 0.45	27	90 gal. @ 0.45	40
Misc. sales alcohol, greases, *etc.*		7		12
Total cost of sales		$ 905		$1,358
Gross Margin		$ 646		$ 971
Expenses				
Salaries & commissions		$230		$ 250
Heat, electricity, water, supplies		35		40
Evaporation & other shortage loss		8		12
Rent, including interest on investment, taxes, and depreciation		160		200
Repairs and maintenance		20		30
Supervision		20		30
Advertising		32		45
Administration		100		140
Total expense		$ 605		$ 747
Net Profit		$ 41		$ 224
Total expense:				
Per cent of sales		39.0%		32.1%
Per gallon of gasoline		7.6¢		6.2¢

It usually is assumed that there is nothing that the oil marketer can do materially to affect the total gasoline consumption. His only hope, therefore, is to secure a greater proportion of the existing demand. He can attempt to do that through the negative device of cutting prices, but in most cases little permanent benefit will accrue, for his competitors will follow him shortly and neutralize his advantage. He can advertise his products and his service more widely without improving them or he can improve his products or his service without advertising them—neither device will be very effective without the other. He must try, therefore, to do both.

Other Marketing Developments

This raises a question as to the importance of quality—of both products and service—so far as sales are concerned. The qualities of gasoline formerly stressed were gravity, volatility, color, and end-point; however, other than quick-starting ability in winter, a function of volatility, these qualities did not have much real significance to the automobile driver. This is not true, however, of the anti-knock quality which has become of genuine impor-

tance with the increase of compression ratios in automobile motors. Differences in quality of motor oil likewise are becoming more important and better recognized, and there is no doubt that the public already is keenly interested in the quality of service.

If these things are true we may expect the public to become more and more brand-conscious. We may expect to see more difficulty encountered by the jobber or dealer who has no well-advertised, high-quality brands and more price cutting on his part as a result. We certainly may expect to see more money spent in improving quality, in advertising, and in service-station facilities. These factors of course mean a general stepping up of the "ante" all the way along the line.

Lately there has been evident a movement toward the sale of other merchandise at service stations, chiefly tires, batteries and miscellaneous other automotive accessories. We probably must interpret this in its broadest sense as an attempt to reduce the effective cost of marketing gasoline and oil by securing some extra revenue to help carry the increasing expense load and take the place of the decline in revenue from a diluted oil-and-gasoline volume sold on a narrower gross margin. On the contrary, it may be held that the movement owes its origin simply to the fact that additional profit can be made from selling these other lines. Whatever the conscious or unconscious motives may be, however, the important question is whether or not this development is economically sound. There are many reasons to believe it may be if properly handled; there are various products related to automobile use which probably can be distributed through existing service stations with relatively little increase in selling expense. It seems to the writer to be a sound economic principle that any commodity in the long run will tend to be sold through that medium which combines the greatest degree of economy in distribution with convenience to the customer. For a number of products the service station would seem to provide this combination.

It may well be, however, that a more generalized approach eventually will have to be made to the whole question of marketing expense in the oil industry. So far as service stations are concerned this may be along the line of seeking even more fundamental means of reducing expense through additional revenue than merely selling other lines. Because of the low potential earnings per square foot or per dollar of real investment, a question might be raised, for instance, as to whether the high cost of the real estate and of the building and equipment necessary for a good-volume service station is warranted merely for that operation. It may be that eventually oil companies will have to try to utilize the "air rights" or the space at the rear of the lot for other purposes. Concerning these questions, of course, one can only speculate at the present time. In any event, however, adding new lines of merchandise or seeking other sources of revenue will complicate the marketing problem and place still greater strains on the marketer's qualifications and his resources, both of capital and of ability.

Conclusion

In conclusion we may summarize by reiterating the statement that most of the unusual marketing problems of the petroleum industry are traceable to the pressure of overproduction of crude oil

for a market. We have seen the mechanism for the exertion of that pressure develop, from the stage when it was relatively indirect because production was not linked with refining and marketing, to the present stage when a high degree of integration makes for an exceedingly direct conduit of that pressure. There appears to be no prospect of a satisfactory solution to the overproduction of crude oil through the free operation of supply and demand; neither does proration offer any really constructive solution, even though it mitigates the problem of the immediate above-ground supply. There appears, therefore, only the hope that the states may restrict new drilling, not a very likely prospect for the immediate future, or that new discoveries may not be made so rapidly when present flush fields have begun to wane. Since this at best would be some time hence, however, no relaxing of the pressure of crude-oil overproduction seems immediately in prospect.

We may expect to see the pressure for sales of gasoline continue, therefore, to break out in increased outlets, in various forms of price cutting, and in increased marketing costs. The effect of these factors is cumulative, and it is believed that they already have reached the point where they leave to the average oil company very little profit from its marketing activities. With the growing integration of oil companies, more and more of the revenue from other ends of the business probably is being pushed over into the marketing end, to be used there in the expensive struggle for assured outlets. It does not seem unlikely, therefore, that we shall see much of the excess capital, which has been so prodigally poured into the industry, finally dissipated on the marketing battle-front. The lower rate of earnings probably will make it impossible for many companies to secure additional supplies of capital to carry on except on rather prohibitive terms. Such companies will, of course, have difficulty in keeping up with manufacturing progress and therefore in maintaining high relative quality of products and volume of sales, to say nothing of attractive and efficient merchandising facilities. In no industry, probably, have there been more examples of men grown rapidly wealthy by fortuitous discoveries of oil or by capitalizing on the marketing opportunities afforded by a rapidly increasing gasoline demand and wide gross margins. There has been, on the other hand, the less romantic but more conservative and perhaps sounder development by some of the older companies, and it now seems probable that the industry is settling into that stage of survival of the fittest, which will see the elimination or absorption of many of the companies whose growth was so sensational.

This may seem to be a conclusion reached merely because the present business depression has accentuated the difficulties of the industry, but it is believed that the depression merely has precipitated some of the inevitable results and hastened the process of elimination. There can be scarcely any doubt that the industry is vastly overcapitalized in almost every branch and particularly in the marketing end. If, therefore, it is true that differences in efficiency and in expense per unit of output are most sharply defined in the marketing end of the business, then the conclusion seems warranted that the struggle for survival will focus most sharply in that department of the industry. In that struggle the possession or command of capital will be important, but even this factor will probably be less important than sound merchandising.

THE UNIFICATION OF RAILROAD TERMINALS

By MARVIN L. FAIR

Introduction

THE problem of terminal unification has been brought to public attention by the recently announced plan of the Interstate Commerce Commission for the "consolidation of railroads"[1] and the recent proposal for consolidation of eastern railroads. In its report the Commission recognized at the outset not only the necessity for careful allocation of terminal properties in any plan for consolidation but also the necessity for greater efficiency and reduction of unjust practices to be effected by cooperation and unification in terminal operations.

It is only within recent years that interest and progress in cooperation and unification have assumed significant proportions. Since our railroads have been conceived and developed along distinctly competitive lines, our terminal districts have developed as areas in which each carrier has attempted in so far as possible to provide the terminal facilities and services necessary to handle its own traffic. Moreover, government control through the regulation of the Interstate Commerce Commission has until recent years attempted to maintain competitive relations between the carriers. Indeed the development of effective regulation of rates, since it caused the emphasis in railroad competition to be shifted to the field of railroad service, served only to accentuate the struggle for competitive advantage within the terminal districts. To attain this competitive advantage each carrier's terminal development was naturally directed toward the realization of a complete network of terminal facilities including freight houses, team tracks, running tracks, industrial sidings, interchange tracks, classification yards, and (if it be a port terminal) various types of piers and pier stations, lighters and car floats. These facilities came to represent great investments and strategic business assets which the rail carriers may be expected to guard and preserve with vigilance.

Without attempting an analysis of the tasks of carrying out a consolidation program in any given terminal district or districts, the writer hopes to give a clear statement of some important factors involved in the problem of railroad-terminal consolidation.

The Beginning of Cooperation and Unification in Terminal Operation

In the course of time it became apparent that the theory of individualistic control, development and advantage when applied in an important terminal district would fall of its own weight.[2] Self-sufficiency in terminal operations could not continue in a terminal district where competing lines were constantly increasing in number and where land values were steadily rising. Long before public agencies began the agitation for greater cooperation and unification in terminal operations, the carriers had instituted, especially in our larger terminal districts, a varied number of cooperative and joint arrangements. There came into existence, therefore, many joint arrange-

[1] *Consolidation of Railroads*, 159 I. C. C. 522, December, 1929.

[2] Chicago Junction Case, 71 I. C. C. 631, 1922.

ments for interchange of freight or reciprocal industrial switching, car inspection, reciprocal puller service, and various localized joint facilities such as shops, bridges, stations, and team tracks. In our larger terminal districts there were to be found scores of such joint arrangements or facilities among carriers.

In the decade immediately preceding the Great War, terminal railroads came into prominence in a number of our terminal districts. These carriers were usually jointly owned and controlled by several of the line-haul carriers which they served as joint facilities in the handling of interchange freight.

The facilities of these interchange carriers included classification yards, transfer tracks and stations, complete or partial belt lines, and certain other specialized equipment. It is interesting to notice that these joint facilities had more conspicuous and rapid development in such inland terminal districts as Chicago and St. Louis than at port-terminal districts such as New York and Philadelphia. The railroads serving the inland terminals interchange a very large proportion of their traffic. On the other hand, the natural water-belt line at New York has permitted each of the many rail carriers entering that terminal district to obtain access to a large part of the port area without involving rail interchange or the use of intermediate carriers. Similarly the extensive water-front and the limited number of entering trunk-line carriers have permitted a large degree of self-sufficiency at such terminal districts as Philadelphia, Baltimore, and other port-terminal districts. An abundance of water-front, therefore, reduces the physical necessity for cooperation among rail carriers at port centers.

It was after 1910, and especially after the beginning of the Great War, that both the wastes of competition in terminal services and the injustice in the practices in terminal charges came to command the attention of the public and semipublic agencies. In its conclusion in the New York Harbor Case the Interstate Commerce Commission stated its conviction that the great terminal problem at New York was largely the result of the distinctly competitive development and operation of that terminal district. The joint arrangements and facilities found in that port were of minor importance. Only through the subordination of the separate interests of the carriers and through unification, the Commission held, could the problem of adequacy and economy of terminal operation in the New York district be solved.[3]

When the dense traffic of the Great War thrust itself on the railroads, the congestion in our terminals became a matter of national concern. Although we had experienced a similar condition of transportation inadequacy in 1906 and 1907, as a nation we were nevertheless surprised to find our magnificent railroad system entirely inadequate to meet the nation's needs. The terminal problem was brought strikingly to public attention. Our surprise at the realization of conditions resulted in investigations both during the War and during the years immediately following it. Among these investigations were those made in connections with the following: conditions of railway competition in the harbor of New York;[4] conditions of railway competition at Chicago;[5] terminal charges at Atlantic

[3] New York Harbor Case, 47 I. C. C. 732–734.
[4] New York Harbor Case, 47 I. C. C. 732, 1917.
[5] Preliminary Report of Chicago Railway Terminal Commission, 1915.

ports;[6] plans for improvement of New York terminal district;[7] and wasteful competitive conditions at St. Louis.[8] These various efforts to diagnose the terminal problem emphasized the wasteful and unjust practices which had grown out of the competitive conditions in our large terminal districts. Through these reports the public gained some notion of the poor utilization of the terminal facilities, the large amount of unnecessary handling and the indirect routing of freight, which, along with unjust practices in terminal charges, characterized our terminal operations. All were born of competition in terminal construction and operation.

In 1920 the Interstate Commerce Commission went beyond its policy of preventing undue and unjust discrimination in terminal charges and operation, in recommending to Congress that a clause be inserted in the Transportation Act of 1920 which would under certain conditions provide for the joint use of railroad terminals.[9] The same Congress passed the Merchant Marine Act of 1920, which along with the Transportation Act included a clause providing for an investigation into port-terminal charges with a view to reducing the discrimination in the absorption of such charges. It was hoped that these measures not only would reduce discrimination but also would make for material improvement in efficiency of terminal operation and development. After almost a decade both of these positive measures have proved most difficult to apply.[10] Having apparently found these clauses impractical and inadequate, in 1929 the Interstate Commerce Commission finally in its consolidation report went on record as being in favor of a more or less far-reaching unification of railroad-terminal facilities and operations.

To effect "efficient and economical operation and the free movement of traffic" the Commission holds that all "terminal properties should be thrown open to all users on fair and equal terms." To obtain this access of a shipper to all facilities and of a carrier to all shippers the Commission proposed the unification of all terminal lines in the respective terminals.

This was a courageous and significant pronouncement, but any program of far-reaching unification may expect to face great difficulties. We need not go far to find ample warning of the difficulties to be confronted. The port of New York authority created in 1921 adopted comprehensive plans for the development of the New York terminal district. These plans provided for such extensive unifications as the formation of a centrally operated system of belt lines, unified lighterage, and car-float service, and universal freight stations on Manhattan. The first of its major projects in unification was to be the formation of Marginal Belt Line No. 13, a belt line on the New Jersey waterfront which would connect the waterfront tracks of the various railroads lying between Bayonne and Weehawken. Presumably the port authority viewed this project of unification as one of the easiest to justify. Nevertheless, the carriers to be served by the new belt line vigorously opposed its formation.

The fact that the four individual units had been operated as a through

[6] *Terminal Charges at United States Ports* by C. O. Ruggles for United States Shipping Board, 1919.

[7] New York-New Jersey Port and Harbor Development Commission Report, 1920.

[8] St. Louis Engineering Committee Report, 1922.

[9] For analysis of I. C. C. policy in terminal regulation see the author's article entitled "The Interstate Commerce Commission and the Railroad Terminal Problem" in *The Quarterly Journal of Economics* for May 1930, Vol. XLIV, pp. 462–492.

[10] *Ibid.*, pp. 485–491.

belt line by the Railroad Administration with a 100% increase in capacity was not a sufficiently convincing argument to the carriers. It was admitted at that time by the President of the New York Central Railroad that the proposed belt line would cause a saving of $1,000,000 per annum and that the capacity would be increased 100%.[11] The fact that some cars were found to travel 187.3 miles, instead of a practicable distance of 43.5 miles, and to consume five days en route should have been convincing to the dissenting railroads. Other shipments traveled 115 miles instead of a practicable distance of eight miles, four days being consumed en route. Instead of ordinary switching charges for the direct movement, the tariffs on the cars by way of circuitous routing ranged from $35 to $240 per car.[12]

But in September, 1923, the carriers announced themselves as "bowing to overwhelming public opinion"—and, we might add, to economic necessity—"that traffic conditions in this port must be radically improved as soon as possible."[13] The carriers finally subscribed the $500,000 necessary to make the improvements.

This experience of the port of New York serves only to show that competition in terminal operation is strongly intrenched, because of the extensive investments now existing in terminal facilities together with the determination of each fortunate carrier to maintain its competitive advantage in these facilities. The recommendations and plans for cooperation and unification which metropolitan planning commissions and terminal agencies have made as a result of their investigations (a few of which have been thorough and dependable) have been violently opposed by our rail carriers. Community welfare and private-railroad welfare are not synonymous.

Only through the development of tremendous pressure from the terminal communities and the country at large can we expect these barriers to give way to a program of unification, no matter how good a program it may be. However, during the past year or two the competition of the now well-developed motor-highway transportation heads the list of those competitive forces which endanger the very future of the railroads. In the efficiency of train movement in line-haul operation the railroads certainly need not fear the motor vehicle. It is rather the high costs and delays incident to railroad-terminal operations which have afforded the fertile field of exploitation for the modern motor vehicle. If the rail carriers but recall that "all those who take the sword shall perish with the sword," they may in the very near future give more heed to suggestions and plans for terminal unification and cooperation.

Although the need for elimination of wasteful conditions in our terminal districts calls for vigorous procedure, we must nevertheless, both in justice to the railroads concerned and even to the public at large, recognize the immensity of the problem and proceed with discretion and discrimination.

We should not, therefore, place too much faith in any proposal for terminal consolidation which minimizes the difficulties to be confronted or which does not carefully discriminate in regard to the types of terminal cooperation and unification that might be employed as well as the types of

[11] Port of New York Authority, Annual Report, 1924, p. 8.
[12] *Ibid.*, p. 11.
[13] *Ibid.*, p. 12.

terminal districts involved. What then is our problem? First, we must analyze accurately the classes of services and facilities. Secondly, on the basis of such analysis we should accurately gauge the economies and the degree of equality of opportunity that would come with various types of cooperation and unification. We should then be in a position to determine the type or degree of unification that is best for specific terminal districts. Lastly, we must consider the best means or method of bringing about the desired unification.

The Problem Analyzed

1. The Services and Facilities.

A railroad's operations in a terminal district may be divided into three groups or classes. The first group includes the more or less noncompetitive operations such as the interchange of cars, loaded and empty, in interchange switches, classification yards, and belt lines, and the joint use of running tracks, bridges, and so forth. These inter-railway facilities constitute the outer facilities of a large terminal district. The second major group consists of the distinctly competitive services which are involved in the delivery and originating of traffic whether at the industrial siding, at the team track, or at the freight house. In the second group the railroads have their contact with the shipping public. Then there is the group of operations which fall between the two major groups, being only partly competitive in nature. This group includes the handling of repair cars, icing operations, the handling of "over" and "short" cars, and the storage of cars. As a matter of fact, these groups of terminal operations and services have been recognized and differentiated in the various types of cooperation and unified operation in existence today. Clearly all these groups of services must be considered in the adoption of any comprehensive plan of terminal consolidation. The difference in the necessity for cooperation tends to be most apparent and easy to accomplish in the first group and most difficult in the last group. Indeed, it is possible to have cooperation in consolidation in one group and not in the others.

The Commission's recognition of the need of providing equal and free access to all terminal facilities by all carriers and traders and the need of eliminating the uneconomic and unjust practices through "unification of terminal facilities everywhere"[14] may, in the light of the practical requirements for the performance of the various functions of terminal operation, be an exaggeration of the lengths to which we should go in our terminal unification. Furthermore, as we shall see in the next section, "the unification of all terminal lines in the respective terminals" which the Commission holds as the immediate objective in approving consolidation plans, while more practical, might accomplish little toward attainment of the goal of greater economy. Let us examine the respective merits of the types of unification and cooperation in the light of differences in the service requirements of terminal districts.

2. The Types of Terminal Unification.

(1) Various types and degrees of cooperation and joint control or unification have been found effective in the various aspects of terminal operation. The first type may be said to include those various minor joint facilities and arrangements which were alluded to as the earlier aspect of cooperation of

[14] *Consolidation of Railroads*, 159 I. C. C. 523.

carriers and which modify what are essentially individual and independent facilities and operations.[15]

Cooperation of this type or degree has become quite common in our important terminal districts, there being no less than 810 such arrangements among the thirty-one trunk lines and other railroads serving the Chicago district.[16]

The popularity of this type of joint or cooperative action is understandable, no doubt, because it has enabled the carriers to realize some operating economies or traffic advantages of more or less importance without the surrender of any real competitive advantages. The joint or reciprocal arrangement for industrial switching is quite common, because in a large proportion of cases the line-haul carrier is not able to reach the industries for which it handles shipments. This reciprocal switching may prompt the carriers to adopt a uniform switching tariff, as in the case of the Lowry Tariff of Chicago. The switching of cars in interchange movement between two adjacent carriers is also often subject to such reciprocal operations. Two carriers under these conditions alternate monthly or quarterly in the handling of cars in direct interchange between the two roads. Such an arrangement greatly reduces the switching and doubles the loaded movement of the locomotives used in direct-interchange operations. Where this arrangement for reciprocal or joint facilities includes team tracks and freight houses (which is not often the case), it may permit specialization in two given freight houses to the extent that one becomes an inbound freight house and the other an outbound freight house. While the economies of this class of joint-terminal operations are considerable in many cases, they in no wise approximate the major economies which the Interstate Commerce Commission and other students of the problem have in mind.

(2) The second type consists of the use of so-called Operating Committees. This is the simplest and one might say the mildest form of joint control which extends over either a large part or all of the carriers in a given terminal district. Such Committees created during the period of the Great War have been restored and continued at Cleveland and Cincinnati, Ohio. These committees are composed of operating officers from the various carriers which serve a respective terminal district. They meet weekly or biweekly. Through their integration of the work of the various bureaus and committees which are concerned with bad-order cars, "over-" and "short-" order cars, and "no-bill cars" and by the establishment of more direct handling of empty cars going to "home" roads, they have not only simplified the interline accounting required to handle the cars within the given terminal district but also have greatly facilitated the flow of traffic in their respective terminal districts. Nevertheless it may be said that these committees, helpful as they are, do not modify individual competitive terminal operation to the degree essential for the realization of the major economies of unification.

(3) We find in a number of our large terminal districts a third and more significant type of cooperation, namely, extensive terminal carriers which serve a number if not all of the trunk lines

[15] These facilities and arrangements usually include joint arrangements, interchange, industrial switching, car inspection, reciprocal "puller" service, and various localized joint facilities such as repair shops, bridges, team tracks and even stations, which one carrier may enter into with one or two other adjacent carriers in serving a given terminal district.

[16] *The Freight Traffic of The Chicago Terminal District*, p. 17.

within the terminal district. These carriers, through extensive belt lines, classification yards, and possibly transfer yards, often perform a major part of the interchange operations of carriers within a given terminal district. At the port of San Francisco the state owns and operates a belt line which serves all the carriers on the San Francisco side of the bay. At the ports of New Orleans, Louisiana, and Charleston, South Carolina, there are city-owned belt railways serving the various carriers entering the port areas. Philadelphia has a controlling interest in a partial belt line at its port. There are in addition about eleven large terminal districts where a terminal company or association controlled by the trunk lines themselves performs a major part of the interchange operations between the rail carriers and between the rail-carriers and the water carriers. These districts include: St. Louis, Missouri; the Hampton Roads district; Houston, Texas; Toledo, Ohio; Indianapolis, Indiana; the Kansas City, Missouri-Kansas City, Kansas district; the St. Paul, Minneapolis, district; the Potomac Yard district near Washington, D. C.; Detroit, Michigan; Galveston, Texas; Jacksonville, Florida; and Birmingham, Alabama. In the cases of New Orleans and Galveston, there are two major belt and transfer carriers. In each case one belt line serves the water-front area and one serves the outlying area back of the port district. It is at Chicago that we find a multiplication of major belt or terminal lines, which are controlled by one or more of the line-haul carriers.

The establishment of the large unified terminal companies and associations in the eleven terminal districts referred to was in most cases really the result of the consolidation of former terminal carriers. The proposal of the Interstate Commerce Commission to unify "all terminal lines in the respective terminals" would be but an extension of the consolidation which has already been going on in some of the larger terminal districts. This, it may be observed, is quite different from the unification of all the terminal properties in a terminal district, since many of the terminal properties even in our large terminal districts are owned and operated by individual trunk-line carriers. Some trunk-line carriers like the Baltimore and Ohio at Chicago have in a given terminal district an extensive mechanism to perform classification and interchange services and to provide the local delivery and dispatching operations.[17] It is obvious, therefore, that the unification of terminal lines in the respective terminals would not permit all terminal properties to be thrown open to users on fair and equal terms, which is the declared objective of the Commission. It would not even throw open all the "non-competitive" interchange facilities now involved in classification, belt-line and transfer operations as integral parts of "non-terminal" or trunk-line carriers.

To give each carrier within a terminal district equal access to "non-competitive" interchange facilities, there must be a unification of all interchange facilities such as was recommended a few years ago by Professor Ripley. The unification of all these facilities in a given terminal district he called the "middle ground" between the present competitive individual operation and the proposal to have a complete unification of all the railroad terminal proper-

[17] The extensive terminal facilities of the B. & O. in Chicago are operated as the B. & O. Terminal Railroad of Chicago.

ties.[18] According to Professor Ripley, all belt-line business including transfer or interchange operations would be performed as a single cooperative enterprise by all the railroads entering the terminal district, either under railroad control or with partial public participation.[19] Although the number of carriers and the volume of traffic of a given terminal district may be such as to require several belt lines, as at Chicago, Professor Ripley contended that they should be operated as one system. The unification provided for in the Ripley suggestion is less far-reaching, however, than that provided for in the recommendations of some of the terminal commissions and committees which have made comprehensive surveys of conditions in New York, Chicago, and St. Louis. The St. Louis Railroad Terminal Association in its present operation approximates the degree of unification proposed by Professor Ripley. The railroads at St. Louis, however, still perform much of the classification of freight both inbound and outbound in addition to the classification of local traffic which they deliver and receive. The St. Louis Engineers Committee recommended in 1922 that all classification be consolidated.

What are some of the economies which are to be obtained from the unification or consolidation of this division of terminal operations as contemplated in the suggestions of the Interstate Commission and of Professor Ripley and others? Better dispatching of trains would result because (a) each industry located on the belt or connecting lines of track would have ready access to all lines; (b) traffic would be more certain to move by the most direct routes; and (c) trains could be made up for certain destinations more quickly and regularly. The delivery of freight would be facilitated, because all industries served by the terminal carrier could get their freight without the numerous delays which so often are incurred by a car switched over the tracks of several railroads in moving from one side of a city to a factory or pier on the other side of the city. Yard room would be conserved because of the joint-interchange operations. More intensive use of piers and transfer platforms would result because of the greater flexibility which would be possible in the routing of traffic. Delays and high switching costs could be reduced materially because such consolidation of interchange facilities would mean (a) more expert terminal crews, (b) heavier loading of locomotives, and (c) less circuitous routing of freight and a reduced amount of switching in classification and transfer.

(4) The fourth type or degree of terminal unification is the complete unification of all railroad-terminal facilities and properties in the given terminal district, operated as one system by a corporation or by a public agency. Such a consolidation of the competitive operations within a terminal district has been recommended by the Chicago Railway Terminal Commission,[20] by Commissioner Eastman in his concurring decision in the recent consolidation report of the Interstate Commerce Commission[21] and by other terminal investigators.[22] This

[18] Ripley, W. Z., "The Problem of Railway Terminal Operation," HARVARD BUSINESS REVIEW, Vol. IV, p. 273.

[19] *Ibid.*, p. 385.

[20] Chicago Railway Terminal Commission Preliminary Report, 1915, p. 10.

[21] *Consolidation of Railroads*, 159 I. C. C. 522, 526 (1929).

[22] See list of terminal experts given by Prof. Ripley in HARVARD BUSINESS REVIEW, Vol. IV, p. 274.

type of unification, it is claimed, will not only secure all the advantages and economies of the third type but will go much further in making a terminal district a coordinated transportation unit, one which will give free access to all on equal terms. It is difficult to know how the Interstate Commerce Commission can expect to provide terminals which will be "open to all users on fair and equal terms" if unification is to be confined to the consolidation of existing terminal railroads. What of all those facilities which are part and parcel of the line-haul carriers? How can a complete reorganization of the transportation facilities of a terminal district be effected without surrender of considerable individual control? Economy in terminal structure, operation, and space occupied by terminal facilities can best be assured through complete unification of rail facilities in a given terminal district. Such action would also facilitate the unification of highway and water facilities which are employed in intra-terminal operations. The result should be reduction of congestion in streets and at pier stations and elimination of the other competitive wastes so notorious in the operation of these facilities in our largest cities. And finally, important economies could be expected to arise from the centralization of car supply, of repair of equipment, and of responsibilities in terminal handling of traffic.

We must not overlook the fact that the weakest part of the freight operation in a very large terminal district is the downtown area of rail facilities, including freight houses, team tracks, grade crossings, commercial sidings, and in some cases lighterage equipment. It is there that the congestion is most serious, that costs of operation are mounting most rapidly, and that wasteful duplication is most conspicuous. These facilities, it may be noticed, would not be directly affected by a consolidation of only the outer interchange facilities. The major portion of l.c.l. freight in a large terminal district is interchanged in the congested district of the city. This is illustrated by the data collected in a recent investigation of the Chicago terminal district.[23] This report showed that 87 *per cent* of the freight traffic in cars handled in the Chicago district was local traffic—traffic originating in or destined to 5,000 points of destination and origin in Chicago. Of the local inbound traffic, 24% was destined to freight houses and team tracks. Much of the 76% destined for industries also went downtown, necessitating the spotting and puller services to be performed in the congested city areas.[24] In the intra-terminal traffic, consisting of 3,634 cars or 39% of all local traffic, about one-third or 32½% of all cars moved was less-than-carload freight.[25] It was found that a larger portion of the through less-than-carload freight went to the downtown houses. In the case of local freight, such handling constituted 68% of inbound freight and 61% of the outbound freight.[26]

The St. Louis report gave due recognition to the importance of the efficient handling of the freight between the trader's door and the line-classification yard and line-haul operation. The report showed that, while the average time for a loaded car in through movement in the terminal was three days, the average time between an industry

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[23] *The Freight Traffic of the Chicago Terminal District, 1927*, p. 27.
[24] *Ibid.*, p. 33.
[25] *Ibid.*, p. 34.
[26] *Ibid.*, pp. 40–42.

and a road was four days.[27] Another case in point is to be found in the cost studies of the New York-New Jersey Port and Harbor Development Commission. Its classification of various services for freight destined for Manhattan showed the following:[28]

ELEMENTS BY SUCCESSIVE OPERATIONS ENTERING INTO AVERAGE COST TO RAILROADS, PER CAR IN 1914, TO OPERATE THEIR HUDSON RIVER PIER AND INLAND RAIL STATIONS, FROM THE BREAK-UP YARD TO STATION FLOOR

Successive Operations	Direct Costs	Fixed Charges	Total
Classification at break-up yard	$ .5622	$ .1979	$ .7601
Breaking bulk at transfer platform	2.7191	.0449	2.7640
Line haul between yards and terminals	.4141	.2833	.6974
Switching and bridging at waterfront	1.0153	.8790	1.8943
Car-float operations	1.3212	.2846	1.6058
Handling freight at terminal stations	3.8617	2.0486	5.9103

The table shows that the cost of classification at the break-up yard, together with the cost of the line haul between the yards and the terminals (item 1 plus item 3), is less than one-tenth of the total cost, and less than one-eighth of the actual average cost of all freight delivered during the period of investigation[29] and that therefore the consolidation of the outer interchange facilities alone in our largest terminal districts would not result in the great economy that a more extensive unification would make possible.

3. *Features of a Sound Program (Facing the Future).*

What then should be the general outline of a program of terminal unification? Five major observations or conclusions may be deduced from the data presented in this article.

(1) In the first place, the great differences in the size of railroad-terminal districts, as determined by the number of rail-carriers, the volume of traffic, or the volume of rail-water and rail-highway traffic, are such as to make no one general program, plan, or principle operative in all terminal districts.

In some districts one type of unification is desirable or necessary while in other districts another type is preferable. The Interstate Commerce Commission in its consolidation report does not appear to recognize fully these wide differences. Commissioner Eastman, while concurring in part, gives a separate opinion in which he points out the desirability of having a single terminal company in every important transportation center that is served by "two or more roads."[30] The question arises, is there not in the scores of such terminals a variety of conditions which require more recognition?

(2) Terminal districts which are served directly by not more than three trunk-line carriers, although they are in some cases important transportation centers, will probably find the individual competitive terminal operation, by the usual joint arrangements, to be most satisfactory. This group is a very large one, including our countless small terminals and possibly such important traffic centers as Boston, Philadelphia, Baltimore, and San Diego.

There are distinct advantages in the competitive operation of terminals. In the first place it means a one-line haul for much of the traffic entering or leaving a given terminal district, since no intermediary terminal carrier is required. The high degree of coordination of line haul and terminal handling of the traffic which this joint control makes possible insures the handling of this traffic with dispatch and economy. The persistence of railway-owned and

[27] St. Louis Engineers Committee Report, 1922, Table 16, p. 117.

[28] New York-New Jersey Port and Harbor Development Commission Report, 1920, p. 164.

[29] *Ibid.*, p. 164.

[30] *Consolidation of Railroads*, 159 I. C. C. 522, 556.

controlled port facilities can be explained and justified in a large part by the fine and exact coordination of rail and water movement which this joint control permits. If we add to these advantages the incentive to efficiency and to the development of facilities which competitive operation affords, we have a good case for the competitive operation of many terminal districts.

This recommendation must not be taken as an endorsement of the serious uneconomic competitive conditions that are to be found in the few large terminal districts which fall in this class. The carriers serving the port of Boston should certainly develop adequate interchange connections near the waterfront instead of having virtually a separate port terminal on each of the peninsulas of the harbor, where three carriers have their respective port facilities. It appears to the writer that the excessive multiplication of freight houses, as at Philadelphia, also might be materially reduced by agreement of the carriers without destroying an essentially competitive set-up of terminal facilities. Only by careful analysis of traffic conditions in terminal districts with two or three trunk-line roads—*e.g.*, Boston, Philadelphia, and Baltimore—could it be ascertained whether or not the gains from unified operation of major facilities such as the classification yards and freight houses would outweigh the economies of competitive operations. In most cases of this class of terminal districts, efficiency as well as justice could be furthered not only by improved methods of coordination between independent carriers but also by the adoption of uniform terminal charges, reciprocal switching and so forth, and possibly by the organization of a Terminal Operating Committee. We could have any or all of these in a given terminal district and still have an essentially competitive operation within various terminal districts.

(3) In this country there are a score or more of important transportation centers where the consolidation of all interchange facilities would appear most feasible. These are the terminal districts which are served by three or more major trunk-line carriers and which carry a relatively heavy and varied traffic. In most of these cities there has already developed considerable consolidation of the non-competitive facilities, in the form of belt lines, classification yards or transfer yards. Among such terminal districts are Hampton Roads, Virginia; Houston, Texas; Kansas City, Missouri; Indianapolis, Indiana; New Orleans, Louisiana; San Francisco, California; Toledo, Ohio; Potomac Yards, Washington, D. C.; Detroit, Michigan; Birmingham, Alabama; Galveston, Texas; Fort Wayne, Indiana; Akron, Ohio; Jacksonville, Florida; and Dallas, Texas. This group of terminal districts might well be enlarged to include several more cities where less consolidation has taken place, such as Los Angeles, California; Atlanta, Georgia; Columbus, Ohio; Cleveland, Ohio; Cincinnati, Ohio; Seattle, Washington; and Buffalo, New York. In this class or group of terminal districts the unification of all interchange facilities would be the most effective if not the most practical program to be followed. The consolidation of all terminal lines in these districts, as proposed in the report of the Interstate Commerce Commission, would greatly improve operations in these districts, but obviously it would fall short of accomplishing complete consolidation of all

the interchange facilities in these districts.

(4) However, there is that small but most important group of terminal districts where unification of the interchange, non-competitive facilities would not suffice and where unification of all terminal facilities, including not only rail but also water and highway, into a "unit terminal" seems to be necessary. These terminal districts are those such as New York, St. Louis, Chicago, the St. Paul-Minneapolis district, and possibly the Kansas City, Missouri-Kansas City, Kansas district, where there is a large number of rails, water, and highway carriers and a great volume of varied traffic; and secondly, where a large proportion of traffic moves between rail and highway facilities and rail and water facilities. All the conditions mentioned are found in these districts. With the exception of Chicago, a body of water separates major sections of the respective terminal districts, requiring the transfer of a heavy volume of less-than-carload freight by a barge, lighter or motor vehicle. Chicago deserves to be included in this list because of the tremendous amount of less-than-car-load traffic which its many rail lines take to and from the city.

The formation of more or less unit terminals in some of these districts has been proposed and urged by investigating bodies. As a matter of fact, the Railway Terminal Association of St. Louis and the Port of New York authority have already found it necessary to carry consolidation beyond the sphere of the non-competitive interchange operations. We cannot improve terminal efficiency and eliminate waste in operations where it is most needed in these terminal districts unless the consolidation is carried to the freight house, team track, and industrial siding.

(5) In conclusion it must be admitted that the method of effecting the desired unification of terminal facilities in a given situation will be determined by the conditions peculiar to given terminal districts, including topography and general physical environment; the arrangement of various transportation facilities, especially the interchange connections and junction points; the location of industrial and commercial districts; the nature of the traffic; the investments involved; and lastly, the existing financial, legal, and managerial circumstances involved. These factors may even determine the degree or kind of consolidation that is practical in any given case. Any classification of terminal districts *must be sufficiently flexible to recognize the practical difficulties that may outweigh what otherwise would be a logical procedure in a program of terminal unification.*

Nevertheless, the recognition of some of the differentiations discussed above will, in the writer's opinion, help to clarify the issue. An intelligent program of terminal unification has great economic possibilities. It is our most imperative transportation need. Events in the near future may determine whether or not the Interstate Commerce Commission, in order to procure for the people of this country a better transportation system, will find railroad management ready to make sacrifices in competitive advantage where and as necessary. The American public is no longer averse to restricting competition where economic advantage results from such restriction. Material progress in terminal consolidation would be one of the notable and most welcome transportation achievements of the next decade of American railroad development.

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THE RAW-MATERIAL ASPECT OF INDUSTRIAL PREPAREDNESS

By ROMEYN B. HOUGH, JR. AND WILTON B. PERSONS

THE appalling state of unpreparedness in which the United States entered the World War is now being again brought to public attention by the publication of General Pershing's long-awaited memoirs in the *New York Times* and other newspapers. In his Foreword, General Pershing says:

> The World War found us absorbed in the pursuits of peace and quite unconscious of possible threat to our security. We had made small preparation for defense and none for aggression. So when war actually came upon us we had to change the very habits of our lives and minds to meet its realities. The slow processes by which we achieved these changes and applied our latent power to the problems of combat in Europe, despite our will, our numbers and our wealth, I have endeavored to describe. Therein lie the lessons of which I write.

Later, he also says:

> We were called upon to make up in a few months for the neglect of years, during which self-satisfied provincialism and smug complacency had prevented the most elementary efforts toward a reasonable precaution to meet such an emergency.

Throughout the early chapters of this intensely interesting document there is constant reference to two fundamental facts: First, the desperate need for haste in making our weight felt on the Western Front; and second, the necessity for delay in order that our forces

might be properly equipped and provided with the necessary munitions. To get these in sufficient amounts required the diversion of our gigantic industries from their normal peace-time pursuits, to the manufacture of the necessities of war. Without any prepared plan, it was inevitable that there would be costly delays before the required rate of production could be attained, and in the meanwhile our Allies must hold on as best they could. To be sure, some of our plants were already making munitions for our Allies and were already tooled to provide similar articles for our own troops. Even with this help, however, a year and a half elapsed before our army could take its place in the line, and then it would not have been possible had we not been able to purchase artillery and other munitions from our Allies. In the event of another national emergency, we cannot count on the existence of any allies to sell us munitions and to hold off the enemy until we can equip our forces.

A previous article in the Review[1] has described the plans of the Assistant Secretary of War for the mobilization of industry for war. Briefly, these plans, developed in compliance with provisions of the National Defense Act of 1920, include the computation of requirements in material of all kinds necessary for a war of maximum effort; the apportionment of these requirements to manufacturers, throughout the country, for production when the need arises; and the giving of assurance to these manufacturers that they will be able to secure the necessary plant equipment, component parts and raw materials for the production agreed upon. It is obvious that the most elaborate plans for war production will be worthless if the manufacturers cannot secure their basic raw materials, at the time needed and in the requisite quantities.

The aim of this article is to indicate some of the practical difficulties which stand in the way of any steps which may be taken by the Assistant Secretary to provide for an adequate flow of certain raw materials.

National Self-sufficiency Unattainable

In this industrial age, no nation is entirely self-sufficient. Every nation must seek certain of its raw materials, either for peace or for war, from other nations. Even the far-flung British Empire does not have resources of sufficient variety and quantity to support its normal peace-time industries, to say nothing of the much greater requirements for a war. The interchange between nations of raw materials, and particularly of minerals, is a fundamental necessity.

Sir Thomas Holland has pointed out[2] that the unequal distribution of minerals in the earth's crust is a controlling feature which may lead to means for insuring international peace. He advocates that every nation a party to the Kellogg Peace Treaty add a rider to its treaty with the United States, giving its Government the power, if and when necessary, to prohibit the export of mineral products to any country that breaks the peace with any other member of the Pact. In support of his contention that any Great Power would be hampered and, in most cases, practically paralyzed, if cut off from the rest

[1] Quinton, A. B., Jr., "War Planning and Industrial Mobilization," HARVARD BUSINESS REVIEW, Oct. 1930, pp. 8–17.

[2] Holland, Sir Thomas, K.C.S.I., K.C.I.E., LL.D., D.Sc., F.R.S., "The International Relationship of Minerals" and "International Movement of Minerals in Peace and War," *International Conciliation*, Jan. 1931. Carnegie Endowment for International Peace.

of the world by such prohibitions, he cites the dependence of Germany on foreign sources for aluminum, antimony, asbestos, chromite, magnesite, manganese, mercury, nickel, petroleum, phosphates, sulphur, tin, tungsten, and zinc; of France for antimony, coal, mangesite, phosphates, chromite, copper, lead, manganese, mercury, mica, nickel, petroleum, tin, tungsten, and zinc; of the United States for antimony, chromite, magnesite, mercury, mica, tungsten, high-grade manganese ore, asbestos, potash, nickel and tin; of Great Britain, alone, for all the foregoing sixteen minerals except coal and possibly iron ore; and of the entire British Empire for antimony, mercury, potash, petroleum and copper; of Italy for all except aluminum, mercury and zinc; and of Japan for all except sulphur.

If there were such treaties and positive assurance that they would be lived up to by all concerned, it is certain that no war could be long sustained. In the absence of such treaties and of such assurance, however, it is incumbent upon the United States to prepare for defense by such means as may be available.

Without plans which will assure an adequate supply of raw materials, the whole scheme of national defense will break down. Such plans require a consideration not only of the needs of all the governmental departments but also of the civilian population. As is well-known, the defeat of Germany arose more from shortages of essential needs of the civilian population, behind the lines, than from defeat on the battlefield. No longer is a war confined to the combatant troops—the whole nation is involved and the welfare of those who play their part as civilians is no less essential than that of the fighting forces. In formulating the plans, therefore, the probable needs of the entire nation are considered. To be sure, the abnormal conditions of war will demand sacrifices by all. It is the price of victory. Only actual needs, not fancied wants, can be considered.

In considering the raw-material needs of the country, the various materials may be broken down into a number of classifications based upon their availability and the probable needs for them.

Effect of War upon Raw-material Requirements

There are certain of these raw materials, the consumption of which will not be increased. There is no reason to suppose that the same population will eat more food, for instance, whether engaged in a war or following the normal pursuits of peace. The aggregate requirements for clothing should be about the same, as clothes are always required. Breaking these two large classifications down into their constituent raw-material components, it is seen that there must be readjustments to provide for the utilization of more of those raw materials of which we have abundant resources and of less of those which are normally imported. In the first classification would fall corn, wheat, and cotton, for instance; in the latter would be included imported table delicacies, wool, *etc.*

There are other raw materials which will be required in greatly increased quantities in the event of a war. Antimony, for instance, used in normal times as a hardening agent with lead to make type metal, bearing metals, *etc.*, is required for the production of shrapnel balls, bullets, and smoke mixtures for use in warfare. During the World War, 70% of the available supply of this metal in the United States was

used for the latter purpose. Mercury, used normally in drug and chemical manufacture, instruments, and in the electrical industry, is required as fulminate of mercury used as the detonating agent in shells, cartridges and grenades. Our normal consumption prior to the World War was about 20,000 flasks *per annum*. Had the War continued, not less than 31,000 flasks would have been used for military purposes alone in 1919.

Copper also falls into this classification. In addition to the many peacetime requirements, it is required in time of war for shell cases, rotating bands on projectiles, immensely increased amounts of wire for communication purposes and for many other purposes. In fact, it is second only to steel in its importance as basic metal required for war. As early as two years prior to our entry into the World War, the demand of the Allies, due to war requirements, had greatly exceeded the available world supply of this metal.

Steel, undoubtedly, takes first place among those materials required in increased quantities during hostilities. Its importance is indicated by the fact that, in 1918, the total output of the tremendous steel industry of this country was placed directly under the control of the War Industries Board,[3] but even that organization had one constant struggle to make the available supply meet the all too numerous demands. Production of steel ingots and castings in 1914 amounted to 23,513,000 gross tons, and in 1917 and 1918 was 45,000,000 and 44,000,000 gross tons, respectively.[4] With this greatly augmented production of steel, it naturally follows that all its basic raw materials were used in increased quantities. These include iron ore, coke, limestone, and all of the group of ferro-alloys: manganese, vanadium, nickel, chromium, and tungsten.

Another metal, which will be required in larger amounts, is tin. It will be necessary to pack more food in tin cans and there will be larger requirements for brass, bronze, foil, solder, babbit and other materials.

Opium, from which is made the pain-alleviating morphine, will undoubtedly be needed in enhanced quantities.

There are numerous other materials in which the medical service will face a shortage. During the last war, in spite of the increasing use of synthetic drugs, serious shortages existed in the supply of iodine, digitalis, camphor, nux vomica, quinine, and numerous other items.

Factors Limiting Self-sufficiency

The enumeration of articles which will be required in increased quantities might be carried on indefinitely. Many of these materials give no particular concern, however, because they occur in such abundance within the continental limits of the United States that the supply is sure to meet the augmented demand. This may be said to be true of those materials which are normally exported in large quantities, such as coal, copper, lead, and petroleum. Zinc, another material that may be placed in this class as domestic production, constituting about one-third of the world's output, is more than adequate for our needs. The aluminum industry and the deposits of bauxite are also so large that there is no anxiety about a supply of this metal.

There are other materials which

[3] Baruch, B. M., Report of the War Industries Board.

[4] *The A B C of Iron and Steel*, The Penton Publishing Company.

occur in the United States but which are not normally extracted due to the high cost of production. Tungsten,[5] for instance, was formerly produced here in greater quantities than anywhere else in the world. The development of large surface deposits in China which could be worked by low-cost labor, however, dropped the price to such an extent that the domestic production has virtually ceased. Asbestos[6] is normally imported from Canada, but adequate deposits exist in Arizona which would be worked if the price were to be increased to make their exploitation profitable. In fact it may be said that the high prices created by war-time demands will stimulate production in practically all instances where high cost is the reason for the normally small production in this country.

There are many raw materials produced in this country in quantities insufficient to meet the normal demand, making it necessary to augment the supply by importation. If the foreign sources are cut off by a war, a serious situation will present itself. The situation would be made additionally serious by an increased demand. Though high prices may serve to increase production and thereby may make up the deficiency in certain cases, in others they will not be effective because of the limited resources. The domestic production of manganese, for example, can be increased, but sufficient high-grade manganese does not exist in this country to meet even the normal demands.[7] There are large deposits of low-grade ores, but high-grade ores are absolutely essential for the open-hearth process of steel making.

[5] *The Marketing of Tungsten*, Bureau of Foreign & Domestic Commerce. Dept. of Commerce.

[6] Baruch, Report of the War Industries Board.

[7] *The Marketing of Manganese Ore*, U. S. Department of Commerce.

Although no antimony was produced in this country, prior to 1914, prices which rose from a pre-war figure of 5¢ per pound to a peak of 45¢ in 1916, resulted in a small production of this metal. Since 1918, there has been no domestic production. Regardless of price conditions, however, known commercial resources are so small that they can be expected to supply neither the peace nor the war requirements.[8] The story of tungsten, chromium, and mica is similar. Production cannot be expected to meet domestic needs either in peace or in war.

Tariff versus Conservation

There are two schools of thought relative to the policy to be followed in the case of materials which exist in this country but which, because of lower cost of foreign production, are either not being produced at all, or which are produced in insufficient quantities to meet normal needs. On the one hand are those believing in a high protective tariff to foster the producing industries. A very high import duty would doubtless increase prices and bring about a larger production for a time, but in many cases would result in the speedy exhaustion of the better-grade and more readily accessible ores. This would leave the country in time of war dependent upon only those ore bodies which even a high import duty could not stimulate in peace time and upon such overseas importations as could be made during a war. The other theory, advanced by those primarily interested in the national defense, is that such ore bodies should be left in the ground as a natural reserve for use only when an emergency arises.

[8] *International Control of Minerals*, Mining and Metallurgical Society of America, and American Institute of Mining & Metallurgical Engineers, 1925.

The danger here is that, in some cases, extensive plant and equipment is necessary for the extraction of these ores and to wait until the emergency exists before installing it, would result in delay which might prove costly. Furthermore, the successful prosecution of any of our mining industries is dependent upon a group of mining men who have specialized in that particular industry, are familiar with its conditions, and have experience with its problems. If the resources are not too limited, it might be better to protect all such industries and keep them in operation.

In dealing with questions of this kind, every raw material must be considered separately for each is governed by a different set of factors. Antimony, for instance, occurs in such small deposits that stimulation of its production would quickly exhaust the known supply. Mercury, on the other hand, is found in such quantities that a reasonable stimulation would serve to continue the industry on a production basis without endangering the exhaustion of the known resources. There are also large resources of chromium, and stimulation of its domestic production might provide the basis for adequate supplies in time of emergency.

Time and Quality Elements in Domestic Production

Tungsten mines, and those of various other metals which are the products of deep mining, as contrasted with placer or open-pit mining, must be continually worked in order to prevent cave-ins or flooding. Once this occurs, it is not only costly to place them in workable condition, but so much time would be consumed that the material might not be recovered before the necessity for it had lapsed. For emergency production, therefore, they must be kept in a workable condition, provided there is a sufficient body of ore to warrant continued production.

From the point of view of preparedness for the national defense, the presence of millions of tons of ore in the ground is of no value in an emergency, unless the ore can be made quickly available. The answer to the question, "How fast could it be produced?" is of far more vital importance than the answer to the question, "How much is ultimately available?"

Another type of shortage of essential raw materials is not due to limited resources but to the lack of proper grades in sufficient quantities. An excellent example of this is afforded by the mineral mica.[9] It is found in large deposits in North Carolina and New Hampshire, but they are composed of low-grade mica, resulting primarily in the product known as "ground mica," useful in the manufacture of various decorative paints and certain building materials. For the manufacture of articles essential for war purposes, however, such as motor spark plugs, condensers for radio apparatus and magnetos, only sheet mica of the highest grade is adaptable. Our mines have never turned out high-grade sheet mica in any quantity, and even the stimulus of high prices in the last war failed to bring about any appreciable increase. It can readily be seen that some other method must be resorted to to take care of this deficiency.

Manganese ore is another mineral not produced in sufficient quantities of the requisite quality, as mentioned heretofore. A possible solution here lies in the fostering of our low-grade industry so as to stimulate the commercial development of technical proc-

[9] *International Trade in Mica*, U. S. Department of Commerce, 1930.

esses of beneficiation with the ultimate view of obtaining the essential ferromanganese from these low-grade ores. During the past four years, rapid strides have been made in the discovery and development of new processes of handling these ores. The manganese producers claim that these processes have reached the stage where they can accomplish the desired purpose. Important steel interests, however, contend that the cost of protecting the manganese industry would necessarily be borne by them, as a tax, and that a better policy would be to hold whatever ores we may have, as a national reserve.

Substitution as a Partial Solution

Among those raw materials which occur in limited quantities there is a possibility of making the available supply sufficient by resorting to substitution. Work is being constantly done along this line and substitutes are being discovered for materials which were heretofore considered essential. During the World War, for instance, a synthetic substitute for camphor was produced from a base of Savannah turpentine.[10] Camphor is normally imported from the island of Formosa, where its exploitation is controlled by a Japanese monopoly. It is required in increased quantities in time of war for dope for airplane wings, projectiles and for medicinal purposes.

Emery, a high-grade abrasive, required for the grinding of optical glass, and formerly obtained exclusively from Turkey, offers another example of the possibilities of substitution. When this source of supply was cut off, a satisfactory artificial substitute was developed. Quebracho, used in the tanning of leather and obtained from Argentina, was formerly considered of serious importance, but it is now felt that the tanning agents—chestnut wood, hemlock and mangrove bark—used in the early days of the industry but since abandoned, could again be used if prices justified their use.

There are also essential raw materials where substitution would be effective to a limited extent, as a conservation measure. Among these might be mentioned tin[11] of which U. S. production is negligible. Since the world supply of the ore of this metal has, for many years, been considered limited, there has been extensive research in seeking substitutes. An added incentive has been furnished by the relatively high prices that have prevailed. One method of effecting savings in tin has been to increase the lead content of the alloy in the manufacture of terneplate and by substituting terneplate for tin plate, wherever possible. There are also possibilities in the use of lacquers in place of the tin in food containers. The function of tin in this connection is to act as a rust preventive which will not impair the wholesomeness of the food and to prevent contamination of the food by contact with other metals. Lacquer will very nearly serve the same purpose, although it does not give the same appearance of cleanliness and beauty. These qualities might be dispensed with during an emergency. A further very effective method of securing savings is to reduce the thickness of the tin coating on tin plate. Whereas the specifications for standard tin plate, in 1919, called for 1.65% of tin, this was reduced to 1.59% in 1927.[12]

[10] Baruch, Report of the War Industries Board, 1921.

[11] "International Control of Minerals." *Op. cit.*

[12] Mantell, C. L., "Future Possibilities of the Tin-consuming Industries:" *Metal Industries*, Vol. 27, January 1929, pp. 5–7.

The second most important use of tin is in combination with lead to make solder. Here exists, in some cases, a possibility of substitution by using cadmium. A unit of cadmium, which has the effect of two units of tin, hence can displace part of the tin. Since cadmium is a by-product of electrolytic zinc plants, more cadmium will become available as the production of zinc is increased. Further substitution of cadmium solder for tin solder is also merely a matter of the reduction of the price of cadmium, through increased zinc production. The use of silver solder in places where resistance to high temperature or vibration is essential, as in certain parts of airplanes and in industrial alcohol stills, will have a slight effect, although this will not be of great weight when considering the aggregate amount of tin consumed.

In the manufacture of foils and collapsible tubes, however, a great deal of tin is being replaced by aluminum. This metal is as free from toxic qualities as is tin, but certain substances, such as soaps, have had the effect of pitting the aluminum. It is reported, however, that methods of counteracting this effect have recently been discovered.[13] Foil is also being replaced by the use of Cellophane in food wrappings. Large quantities of tin salts were formerly required for the preparation of silks for dyeing and in weighting, but the introduction of rayon and the decrease in the use of silk has lessened this usage.

As an indication of the possibilities along this line, the records of the War Industries Board show a saving of 4,680 tons of pig tin through substitutions for tin plate containers alone. The possibilities for the additional substitutions enumerated above will effect still greater savings.

Tungsten is required for high-speed tool steel. To do without it would materially reduce the rate of production in the metal-working industries. Since rapid quantity production is a war-time essential, it is highly desirable to conserve the limited supply of this metal. This was accomplished, to a certain extent, during the World War, by the welding of a thin plate of tungsten steel to an ordinary bar to form the cutting edge of the tool, as against the old practice of making the whole tool of high-speed steel. Since that time, substitutes have been developed which will effect additional savings. Among these are molybdenum, zirconium, Stellite, chromium and carboloy.

Antimony is another of the metals in which possibilities of substitution are worth while.[14] Among its thirty odd uses, there are many opportunities for substitution. In the hardening of lead, it may be replaced by bismuth, barium, calcium, magnesium, strontium or even copper. Thus in the manufacture of antimonial alloys and bearing metals, considerable savings can be made. In the manufacture of rubber, other materials such as vermillion red (artificial cinnabar) may be used as coloring matter. For this usage, as well as for many other purposes, antimony has been used, for some time, merely on account of its relative cheapness. Any appreciable increase in the price of antimony created by a shortage would automatically cause a return to the use of the normally more expensive materials.

[13] Churchill, H. V., "Notes on Inhibition of the Corrosion of Aluminum by Soap": *Am. Inst. Min. and Met. Eng. Tech. Pub.* 176, 1929, pp. 244–247.

[14] "The Marketing of Antimony." *Op. cit.*

The Limitations of Substitution

There are certain other materials which do not offer such favorable possibilities for substitution. Opium, for instance, which is used as an anodyne, in the form of morphine, for the relief of pain, has no universally acceptable substitute. While the bromides, chloral hydrate and its compounds, hyoscine, sulphonal, paraldehyde, trional, *etc.*, can be used as hypnotics in cases of insomnia of nervous or mental origin and phenacetin, acetanilid, antipyrin and other coal-tar derivatives can be used to allay pain, there is nothing that can take the place of opium or its alkaloids in the relief of pain and shock caused by gunshot injuries in time of war. For humanitarian, as well as practical reasons, therefore, opium must be secured. A possible solution lies in the large stocks of opium and its derivatives which are seized from time to time by the Bureau of Internal Revenue, although it is only the higher grades of opium which are suitable for medicinal purposes.

Another material for which there has thus far been found no satisfactory substitute is nickel. This metal will be required in greatly increased quantities, as it is essential for gun steel, armor plate and bullet jackets. Furthermore, it cannot be dispensed with in many of its normal, peacetime uses, without material reduction of productive efficiency. It is required in the form of nickel steel for gears, machines, and tools and is essential in nonferrous alloys and for other purposes. The largest requirements, however, are for use in steel making. During the World War period, approximately 75% of the world's production was so utilized, and for this purpose there is no substitute.

Another material falling within this classification is mica. Proof of this is given by the experience of Germany during the late war. Cut off from resources of high-grade sheet mica, this power developed Pertinax, a compressed paper product having certain of the qualities of an insulator. Although found useful for some purposes, Pertinax proved of comparatively little value as a dielectric, for certain uses. An instance of this is the replacing of mica for interleaving between the copper segments of commutators of electric motors and generators. In order to be acceptable for this purpose, any substance must not only have extremely high dielectric strength but must be resistant to fusion, have the same coefficient of expansion as copper, and have exactly the same wear-resisting qualities as this metal. Neither Pertinax nor micarta, another attempted substitute, meets these rigid requirements.

Relative to mica, Sir Thomas Holland has very forcefully concluded:

> There is no other mineral and no artificial substance that can combine the qualities which give to the mineral mica, its position of importance in the Arts—its fissility in thin sheets, its transparency to light and opacity to heat rays, its stability at high temperatures, its toughness and the degree of its insulating properties. There will never be a synthetic mica.[15]

It is possible to continue the enumeration of materials for which there are no satisfactory substitutes but the aforementioned, together with mercury and manganese, constitute by far the most important.

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[15] Holland, Sir Thomas, K.C.S.I., K.C.I.E., L.L.D., D. Sc., E.R.S., "The International Relationship of Minerals," and "International Movement of Minerals in Peace and War," *International Conciliation*, January 1931. Carnegie Endowment for International Peace.

Reclamation Another Partial Solution

There is a group of raw materials to which an additional and very important method of conservation may be applied. This is reclamation by means of which certain metals may be used repeatedly. In recent years, the annual recovery of secondary antimony from old alloys, scrap and dross has been nearly equal to the imports of virgin metal and alloy. Tin is another outstanding example of the extent to which this can be carried. In 1928, the secondary tin recovered was equivalent to 41% of the virgin tin imported into the United States and was valued at $35,678,300.[16] Rubber, which must be obtained from distant lands, must be conserved and, here again, reclamation comes in to assist in bridging the gap between the extraordinary demand and the available supply. The annual recovery of rubber from scrap amounts to approximately 165,218 short tons contrasted with total imports in the crude form of 477,375 tons.[17] Tungsten, nickel and manganese are recovered, to a certain extent, from steel scrap.

The efforts directed toward reclamation would naturally be accentuated during any scarcity brought about by war conditions and demands. Thus it is seen that even the lowly junkman has a most important part to play in the scheme of national defense.

There are, on the other hand, other materials the nature and usage of which preclude any possibility of reclamation. An interesting example of these is vanadium which is used to purge steel of undesirable elements and also as an alloy to increase the elastic limit and tensile strength, without decreasing the ductility. Although more than 6,000,000 pounds of this metal were used up by the War, there was little salvage for the reason that the loss of vanadium in remelting alloy steel is practically complete. On account of the utilization of the greater proportion of mercury in the manufacture of drugs and chemicals, paints, fulminate and felt manufacture, little of this metal is recovered. Mica, as used for its normal purposes in the trade, is also not available for recovery.

War Reserves a Means of Increasing Security

In spite of the application of any or all of the aforementioned means of adjusting the relationship between demand and supply, there will still remain raw materials for which there will be shortages for essential war-time needs. One possibility for obviating this, previously mentioned in the case of opium, is the maintenance of an adequate war reserve. The War Department has made very considerable progress in ascertaining the amounts necessary for raw-material reserves, but the means of establishing such reserves are not yet available. Among other factors militating against this is the necessity for investing large funds in such stocks. Formerly, there normally existed considerable stocks of most of these materials in the usual channels of trade, but of late, the policy of carrying smaller inventories has materially reduced them.

War-time Importation Still Necessary

In the absence of reserve stocks of these materials, the only remaining alternative, if we are to be prepared to sustain a war of any magnitude, is to secure them by importation during hostilities. There are various factors

[16] Merrill, Charles White, *Tin in 1928*, Bureau of Mines, U. S. Dept. of Commerce, Government Printing Office.

[17] *Statistical Abstract of the United States, 1930.*

which will complicate, or possibly prohibit, such procedure. These factors, determining the magnitude of importation difficulties, vary in importance with the different raw materials. They include such matters as distance from source of supply, relative bulkiness, and political, financial and commercial control of the sources.

The Problem of Tonnage and Distance.—Those raw materials which must be procured from far-distant sources constitute an especially grave problem on account of the vital importance of the time element. If such a raw material be also bulky, the problem is further aggravated.

Just such a material is manganese which, as shown above, will be indispensable in time of war, and yet which is not found in adequate grades and quantities in this country. Under normal conditions a preponderance of the requirements for this mineral is obtained from Russia and India, with the Gold Coast of Africa becoming of increasing importance. On account of its bulk and the long distances involved, conditions may make it essential that it be obtained either from a nearer source or one with which communication can be more easily maintained in time of war. Regardless of whether or not sea lanes are open, any move to conserve our limited shipping facilities is highly desirable. Brazil, at present a small producer of manganese, offers an alternative source, which may come under the latter category. Brazilian deposits are adequate, and the quality of the ore in certain respects is superior to that from other sources.[18]

A contrast to this material is afforded by opium, since it is fully as essential and must be imported from as great a distance, but yet it does not constitute as great a shipping problem on account of its small bulk.

Political and Financial Control, Affecting Importation.—Political and financial control is of relatively small importance in the case of those materials which must be obtained from a long distance, inasmuch as it will be difficult to keep such long sea lanes open in any case. Where the distance is short, however, political and financial control may become factors of first importance. For instance, in the absence of political control, a country may find its most important source of supply in the hands either of a belligerent or of a country adopting a strictly neutral attitude. Financial control allows the raw material to be made more quickly available by the use of American capital, American management and American methods of production. Nickel, obtained from very close to our northern border, would undoubtedly be much more accessible to the United States, in case of an emergency, if controlled politically and financially by this country.

The tin situation shows a very interesting example of the effects of political control over raw material. Mined primarily in the Federated Malay States, Bolivia and the Netherland East Indies, much of the concentrated ore is transported to Great Britain, where 33% of the world production is smelted. The Bolivian ores, along with some others for admixture therewith, could advantageously be smelted in the United States, were this movement not prevented by enactments intended to protect the smelting industries of other countries. These preferential tariffs were largely instrumental in causing the cessation of tin smelting in the United States.

[18] Furness, J. W., *The Marketing of Manganese Ore:* Trade Information Bulletin 599, Bureau of Foreign & Domestic Commerce, 1929, p. 23.

Since commercial control is more or less a habit resulting from the avoidance of unnecessary financial risk and expense, it is not so important as the other forms of control. In time of war, it is not necessary that trade follow the usual channels, since expense is one of the lesser considerations.

Efforts to Find Solution through Planning

After an extensive study of the foregoing, and other factors, the Assistant Secretary of War, who is charged, by the National Defense Act of 1920, with the duty of assuring an adequate flow of supplies in the event of an emergency, has designated twenty-six raw materials as "strategic." Strategic raw materials are those which domestic production is either entirely or partially unable to provide for essential war-time requirements, both civil and military, after full advantage has been taken of possible and satisfactory substitutes, and the importation of which may be jeopardized by probable war conditions. Studies relative to these materials are being continued and, as each case is satisfactorily solved, the material is removed from the list. It is quite probable that the list will be reduced in the near future. There still remain, however, certain articles relative to which the problem of securing an adequate supply has not yet approached a satisfactory solution. They are as follows: antimony, mica, manganese, mercury, opium, nickel, tin and tungsten, all of which have been referred to heretofore.

With respect to the solving of the foregoing problems, as well as all the other phases of industrial planning for defense,[19] the Assistant Secretary of War is receiving invaluable assistance, and whole-hearted cooperation, from the industrial leaders of the country, and of trade, industrial and engineering societies and associations. While such plans can never be said to be complete, it is obvious that as long as such planning is being carried on, the United States will never again be found in the shamefully unprepared condition in which it entered the World War. The lessons of which General Pershing has written have not been allowed to go unheeded—"reasonable precautions" are being taken to meet another emergency.

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[19] Quinton, HARVARD BUSINESS REVIEW, Oct. 1930, *op. cit.*

THE STANDING RECEIVER—A MAJOR STEP IN BANKRUPTCY REFORM

By JOSEPH S. OETTINGER

WHEN in January, 1929, the Irving Trust Company was invited to act as standing receiver for all bankruptcy proceedings in the Southern District of New York, the court was recognizing the failure and inadequacy of the existing system. The evil practices and abuses which had permeated this administration for many years had been the subject of numerous inquiries and programs of reform. In 1924, a committee of the Merchant's Association of New York recommended an investigation with the statement, "We are convinced from our study of the subject that the present bankruptcy laws are seriously defective and tend needlessly to divert from the creditors to the officials who administer the law an excessively large part of the assets in bankruptcy cases." Amendment of the law attempting to improve the situation failed wholly to accomplish the purpose, and only added to the complexity and costs of administration. In March, 1930, the report of the special official inquiry under Colonel William Donovan[1] revealed the wasteful inefficiency and corruption that had existed throughout the older system.

Before discussing the operation under the present order, it may be beneficial to describe briefly the proceedings as experienced prior to 1929. It is unnecessary to point out that abuses and corrupt practices were not found in every case nor were they practiced by all parties to the proceedings. Yet while most of them were very prevalent and characteristic, the mere existence and recurrence of others without disclosure and correction is indicative of the weakness and inadequacy of the whole procedure.

[1] *An Inquiry Into the Administration of Bankrupts' Estates* (submitted by William J. Donovan). Court Press, 1931.

I. Nature and Extent of Bankruptcy Abuses

The Federal Bankruptcy Law of 1898. The Federal Bankruptcy Act of 1898 was based on the theory that the administration and disposition of an estate should be in the hands of its creditors and their agent, the trustee. Since the problems involved in the supervision of the estate are essentially of a business nature and require more than a legal-trained mind, the active participation of the creditors was intended to provide the necessary business initiative and experience. The functions of the court and of its referee consisted in passing judgment on claims and issues in dispute, of approving or refusing to approve compositions and discharges, and of assuring efficient and equitable operation of the system. The receiver was conceived as a temporary officer who was appointed by the court in only the cases where one was necessary to conserve the assets and who managed the estate until the election of the trustee by the creditors. The attorneys of the various parties were supposed to protect the interests of their respective clients in court and to execute properly the complex legal steps.

It was believed that the creditors in each particular case could and should

control the administration; that the early election of the trustee would in most cases obviate the need for a receiver; that the trustee would be conscientious and energetic in his work; and that the creditors in their own interest would act decisively in promoting an adequate administration, in pressing any investigations and in prosecuting criminal actions. Finally, it was believed that the courts' function would be almost entirely judicial; and that attorneys, in being confined to only the legal aspects, would play a minor rôle.

Causes Underlying the Failure of the System.—The system in actual operation differed radically from the theory. As disclosed by the various investigations, a number of serious abuses were allowed to evolve and destroy the confidence of the business community in bankruptcy administration. Largely responsible for the breakdown was the failure of creditors to take interest or cooperate actively in the administration. Under modern conditions of trade, the creditors of a company were apt to be located over a large part of the country. In many cases, especially where the claims were small, it was neither possible nor feasible for these creditors to attend and aid personally in the meetings and proceedings. In many cases, control of the claim was given to the first agency or attorney who solicited for the proxy, the debt was written off as bad, and the creditor refused to throw good money after bad for investigations or suits for recovery of assets.

Similarly, it was fallacious to believe that the interests of all creditors were identical and that they would cooperate in the administration. It was frequently to the interest of one group of creditors, hoping for future business from the concern in difficulty, to urge a favorable composition; while other groups, having no possibility of or not desiring future business relations, found it to their interest to insist on the sale or liquidation of the business with a view to the largest possible dividends.

Under such circumstances it was only to be expected that receivers, trustees or attorneys appointed at the instance of a particular group of creditors should be under constant pressure to direct the administration along the lines favored by those responsible for their appointment. Even when they resisted all pressure and administered the estate for the best interest of all creditors, the fact that they had been appointed through the influence of a special group rendered them vulnerable to attack by any dissatisfied faction in the creditor body.

The breakdown of the system has also been caused by the lack of responsible administrators. Prior to 1929, it was an established custom for the attorney for the petitioning creditor to be retained as attorney for the receiver. Since this attorney often controlled or represented the majority of creditors, a trustee was subsequently elected who would continue to retain him as counsel. Prior to 1929, these attorneys dominated the administration not only in arranging the legal and commercial steps, but in making the major decisions of policy as well. The receiver, allowed a fee inadequate to attract real ability and dependent upon the goodwill and favor of the attorney for election as trustee, became a mere figurehead. The Donovan investigation revealed that attorneys' fees and expenses constituted the largest single item, accounted for over a third of the total costs and was more than three times the amounts paid to receivers and

trustees.[2] The practice of retaining the attorneys as a matter of course resulted in an irresponsible administration and a lack of real creditor representation. In friendly involuntary proceeding, a friendly attorney petitioned for three friendly creditors and thus became the administrator of the estate. In reality, he often represented neither receiver nor creditors but the bankrupt himself. In other cases, the attorney represented only one group of creditors who were in position to take advantage of a minority or a lethargic majority of other claimants. In still other cases (as will be pointed out below), the attorney himself took the initiative in the proceedings and really represented no one but his own interests, which he proceeded to protect to the fullest extent. This complete irresponsibility of attorney administration, unchecked by creditor control, encouraged inefficiency and corrupt practices.

In the attempt to eliminate some of the abuses, the Law of 1898 was amended and the courts made new rulings. The net result was only to require more legal steps and documents, to delay, complicate and increase the costs of proceedings, and to draw the court and the referees more deeply into the maze of the commercial affairs. This in turn made receiver and creditor control more difficult, strengthened the dominant position of the attorney, destroyed creditor confidence and interest, and thus again made for greater laxity and abuse. The vicious circle was complete.

Abuses of the Older System.—One of the most serious abuses of the system prior to 1929 was the excessive resort to bankruptcy proceedings. The bulk of the practice in New York City was concentrated among 21 keenly competing law firms. Since the attorney for the petitioning creditor was customarily made attorney for the receiver and later for the trustee, a great incentive existed in finding weak concerns and petitioning them into bankruptcy. The Donovan report disclosed the widespread sharing of fees:

> Fees were split with certain employees in the Clerk's office for advance information on the filing of petitions . . . Creditors were bribed into permitting the use of their names on petitions by arranging for them to obtain merchandise in the bankruptcy proceedings on fictitious claims. The attorney for the petitioning creditors would pay a percentage of his fees as attorney for the receiver and trustee to the bankrupt's attorney or the collection agency that had been instrumental in obtaining the case for him.[3]

The consequences of this abuse were found not only in the maladministration and corruption that naturally followed but also in the injurious effect on the business community. Bankruptcy proceedings, as a liquidation of an estate under court supervision, are generally a more expensive method than other forms of settlement. Therefore, they should be used only in those cases where agreement cannot be otherwise reached, where controversy on claims or assets exists, or where fraudulent or corrupt action requires legal action and correction. Yet prior to 1929, concerns which were experiencing only temporary financial difficulty and would have survived the crucial period, or concerns which could have made agreements and compositions out of court without any difficulty, were thrown into bankruptcy by unscrupulous and unethical attorneys who as administrators and counsels manipulated the estates to their own benefit.

[2] *Ibid.*, p. 29.

[3] *Ibid.*, p. 4.

The incentive likewise existed for the merchant with large debts to arrange a bankruptcy and free himself from his obligations. Frequently the friendly involuntary petition has been used for collusive purposes. A typical example has been recently described by Morris Marks:[4]

> A debtor has concealed his assets and contemplates resort to bankruptcy so that he may cheat his creditors. To ward off possible investigation of his books which may disclose his fraud and send him to jail, he engages a "good" lawyer of the bankruptcy bar to protect his interests. Perusing the list of creditors, the lawyer recognizes some as being among his own clients or the clients of others with whom he has had professional dealings. The list also contains the names of creditors who, he knows from experience, are willing to retain a lawyer designated by him to file a petition, in return for full payment on their claims. The bankrupt thereupon readily admits his insolvency and submits a written admission thereof to the friendly "opposing" attorney, who thereupon files the petition, procures the appointment of a receiver and is retained as his counsel . . . So, the ultimate settlement is favorable to the bankrupt and the evidences of fraud remain safely hidden in his lawyer's files. By reason of his "professional skill" in handling the delicate case, the bankrupt's counsel is amply compensated; for his willingness to cooperate in the fraud, the receiver's attorney is allowed a good sized fee by the court; the petitioning creditors have lost nothing. Only the creditors who have not abetted the crooked bankrupt suffer.

Proceedings initiated under such auspices led to many other abuses. It was found that custodians, appraisers and other agents were appointed through political or other influence for work they were not qualified or did not intend to do. In this field also were found frequent cases of fee-sharing and unethical patronage.

The administration of the estates was ill-performed by such parties. The abuses of the system and the inadequate fees did not favor and attract honesty and real ability. Attorneys who assumed the dominant position were neither sufficiently acquainted with nor experienced in the commercial aspects to assure an efficient and economical operation or liquidation.

Widespread corruption was added to maladministration. As pointed out above, a bankrupt in friendly involuntary suits often conspired with the attorney to conceal assets and to refrain from investigations and criminal prosecutions. Similarly, one group of creditors were frequently found to profit by preferential or secret payments at the expense of the others. Such assets as merchandise, leaseholds, receivables and securities, were sold to bankruptcy rings or at private sales at greatly undervalued prices. Cases were found where cash, securities and other valuables were stolen by one of the administrating agents; other cases showed the reports of receivers and trustees to be defective or delinquent. Padded and manipulated expense accounts were presented and paid out of the assets of the estate. Finally, compositions were arranged without adequate investigation which benefited the bankrupt or a group of creditors at the expense of the remaining claimants.

The conditions prior to 1929 justified the conclusion of the Donovan report:

> Unless there is such revision, we can see nothing but a continuance of the evils that manifest themselves not only in this district but throughout the whole country. The courts will still be subjected to administrative burdens they cannot carry. Low compensation for receivers and trustees will still discourage from the bankruptcy field competent and experienced individuals and corporations. Formality and red tape will remain. The present futile election

[4] *How to Correct Credit Abuses.* (Harper's, 1930.)

system will be left untouched. Dishonest debtors and unscrupulous attorneys will continue to prey on the commercial community. And in another cycle of years, another bankruptcy scandal will precipitate another inquiry directed to the attempted punishment of those whose corrupt activities were invited and encouraged by the system itself.[5]

II. The Trust Company as Standing Receiver

The appointment in January, 1929, of the Irving Trust Company as standing receiver for the bankruptcy cases of the Southern district of New York was a step of major importance in correcting the existing abuses. Various attempts at improving the method of appointing receivers had been previously tried, but without success. For a time, the experiment of having the creditors meet shortly after the filing of the petition and recommend a receiver failed because of lack of interest and nonattendance of the creditors. The system was later modified by allowing the creditors at the meeting to decide to continue the receiver the judge had already appointed, or to recommend another to replace him. For a period later, the appointments were made from a list prepared by a group of business executives of men who had ability and experience in the different lines of trade. This plan also proved unsatisfactory. Finally, the judges considered the compilation of an official list from which the receiver would be picked. This possibility was given up with the decision to concentrate the responsibility in a single financial institution. Judge John C. Knox, Senior Judge of the District Court, said:

> For over a year, I was personally convinced that nothing short of a radical change would improve the situation. Because of certain obstacles at the time, it was not until November, 1928, that the Judges of the Court decided that the constant pressure for appointment, the maladministration and the dishonesty would be best eliminated by securing the services of an outstanding trust company.

Many of the qualities possessed by a large bank make it well-qualified to act as receiver. The centralization of responsibility in such an agent, organized to act continuously, allows and impels a superior administration. A bank, such as the Irving Trust, has a reputation and goodwill among business men which it cannot allow to be jeopardized by an inefficient or irregular receivership department. The continuity of its operations not only enables the department to develop an enviable reputation of its own, but encourages from the start a feeling of security and confidence from the business community and the court. Assured that an impartial and economical administration will recover, liquidate and distribute the assets of an estate, the creditors are interested and active in their cooperation. Relieved of the very difficult task of supervising closely a large group of ever-changing receivers, the court is able to maintain a continuously intimate touch with one organization whose systematic operations and complete reports promote greater confidence and less interference from the judges and the referees.

A trust company furthermore is experienced in acting in a fiduciary capacity and has experience with systems of procedure and control. Through its regular banking operations, it has gained a familiarity with business conditions, practices, and companies. Because of its financial strength and its independent position, it may act impartially and unrestrainedly without politi-

[5] *Ibid.*, p. 14.

cal or other influences. As in all its divisions, the company chooses its employees only after a most exhaustive investigation of their past records. Organized for continuous operation, the department is divided on functional lines; this form of organization facilitates the administration of the estates. Through the full utilization of exceptional ability and specialized training, the department is able to attract and employ high-salaried men. Finally, while the department operates as an entirely separate entity within a bank, it may have, when it desires, the advice and aid of the other departments of the organization.

The appointment of the Irving Trust Company as standing receiver recognizes by act the need of an official responsible administrator. Yet it does not constitute a change in the basic theory of bankruptcy proceedings. While a receiver has been found to be necessary in the large majority of cases to conserve the assets, it was intended that he should serve only for the preliminary period before a trustee could be elected and given control. The choice of trustee is still determined by the creditors and his acts are subject to the same creditor control. However, by an amendment of the general orders on January 13, 1930, a District Court employing the service of a bank as standing receiver was allowed to provide "that notice may be given to the creditors of the availability of such institution to act as trustee if elected." Due largely to the confidence which creditors have placed in the administration of the Irving Trust, it has continued as trustee in about 80% of the proceedings in which it acted as receiver and which have not been dismissed during that period. In many cases, the creditors have elected committees of representatives which have advised and cooperated with the company, and greatly expedited the proceedings.

The department eliminated one of the sources of serious abuse in the first year of its appointment by refusing to retain attorneys who unethically sought to put companies into bankruptcy. This change of practice and the establishment of an active responsible receiver removed the greatest of the incentives to petition a company into bankruptcy unnecessarily. Thus, as the Donovan Report states, in the first year, 1929, there was a significant decrease of almost 25% in the total number of bankruptcy cases, a large decrease in the percentage of involuntary proceedings, a substantial increase in the number of assignments, and a conspicuous inactivity on the part of many of the formerly outstanding attorneys.[6] Through another amendment adopted on January 13, 1930, the local court prohibited in all cases the retention by receivers and trustees of attorneys representing the petitioning or other creditors. The custom was thereby destroyed by an absolute instead of the former qualified prohibition. The attorney has been confined to the legal phase of administration, which is in accordance with the original intentions of the Bankruptcy Act.

III. The Structure of the Receivership Division

When the Irving Trust Company in January assented to act as standing receiver, it was faced with the difficult task of organizing a department which could be put into immediate operation. The difficulty was further increased by the lack of precedent on which to base the organization and by the inexperi-

[6] *Ibid.*, p. 31.

ence of the executives in bankruptcy administration. Since the establishment of the department, many revisions and improvements have been made in organization, in methods of procedure, and in the systems of control.

A brief description of the organization and operation of the Irving Trust Receivership Division will indicate the superiority of a responsible permanently organized administration. Under the general supervision of a Vice President of the company are five departments, of which four are Administrative Groups, and the remaining one the Executive Department.

Each Administrative Group is organized as a complete entity to handle a number of bankruptcy cases. In each group a Representative, aided by three assistants, is responsible for arranging and directing the actual liquidation of an estate. He takes possession of the bankrupt's assets, aids in investigation of assets and in taking of inventories, transmits accounting records and valuables to the office, calls and supervises meetings of the creditors, and directs the sale of assets and the disbursement of dividends. It is the function of this officer to provide a continuity of responsible administration.

To aid and control the work of the Representative, the various detailed stages in the proceedings have been carefully itemized in a standardized Case Book. Each page lists the routine steps of that stage, and allows room for dates of commencement and completion. To each proceeding is assigned a Case Book. As the various steps are taken, the Representative or the Group Secretary fills out the page, makes any notations of special importance at the bottom, and sends it to the Group Progress Records Clerk. The latter collects these pages in a new Case Folder, and notes the completion of that stage on a large progress chart of all the Group cases. The clerk is responsible for calling attention to any omission or error, or to any excessive delay. In addition, each Group has its complement of information, filing and stenographic clerks.

The administrative section of the Receivership Division has been divided into these four completely integrated and independent departments to combine the advantages of the small, flexible business with those of specialized ability and knowledge possible only in large, permanent organizations. A closer, more personal attention to the management of many different types and sizes of estates is thus provided. By developing a sense of Group cooperation and responsibility, it encourages efficient and economical administration. Finally, through the adding or dropping of a Group, it provides the Division with a flexibility for adapting itself to changes in its volume of business.

The fifth branch of the Receivership Division is the Executive Department. It functions for the organization as a whole by performing a number of specialized services. An Estates Collection Service devotes its attention to the collection of the accounts receivable of all bankrupt estates. A Documents Section prepares the legal statements required in the various stages of liquidation. An Inventory, Appraisal, and Sales Section, after consultation with the Groups Representative in charge, proceeds to dispose of the estate merchandise as profitably as possible. (Practically all inventories are sold at the auctions of the Underwriters Salvage Company, an organization which is maintained by a number of large insurance companies, and which was selected

by the court after thorough investigation.) The Estates Accounting and Cashier Section records the statements of estate assets, their liquidation and collection, and the disbursement of the funds in dividends and expenses. Thus the Executive Department includes functionally specialized sections which can serve more economically and efficiently all four Administrative Groups and the Division as a whole.

The procedure to be followed in the administration of an estate from the time of the appointment of the receiver to the completion and discharge has been worked out in great detail. The functions of each department and the duties of each employee have been defined so as to reap the advantages of specialized training and ability and to develop a skillful and efficient administration. Systems of control have been devised which check up on the employees, coordinate the activities of the various departments, and prevent any neglect or dishonesty.

IV. Operation of the New Receivership Arrangement

Many advantages have accrued from the appointment of the Irving Trust Company as standing receiver and the establishment of a responsible permanently organized department. One authority on the subject has summarized these benefits in stating:

> The Irving Trust has provided the assurance of an honest administration. It has placed at the disposition of estates in bankruptcy, facilities for administration possessed by large industrial and commercial organizations. It has eliminated politics in the employment of receivers, attorneys, custodians, and auctioneers; and under the rules to be adopted, politics in the employment of appraisers. It assures impartial treatment to all creditors and promotes cooperation between various groups, both secured and unsecured. Finally, it assures the bankrupt against a wasteful administration of his estate and against any illegal action on the part of the receiver or his agents.

The greatest potential dangers and weaknesses of a corporate receiver lie in the possibilities for bureaucracy and inflexibility. It has been frequently pointed out that each bankruptcy proceeding is surrounded by individual conditions and circumstances that make impossible standardized and impersonal treatment. It has also been asserted that the employees of a department become conventional and perform their work with less zeal and attention than the individually appointed receiver. It must be recognized that these dangers do exist. Yet these same criticisms may be directed against any corporation in conducting its regular business and in dealing with its customers. The department, like the corporation, can avoid these undesirable traits through the retention of a capable staff of executives and a conscious effort to attain and maintain a high standard of administration.

Since the introduction of the new system there has been a distinct trend toward settling cases through the mediation of trade associations and credit and collection agencies. The reasons most often advanced to explain this movement are that the liquidations and settlements can be effected out of court with a greater rapidity and economy, and inferentially with larger dividends to the creditors. Theoretically this is possible and in many cases actually true. In many ways, the present legal proceedings are drawn out, formal, inflexible and costly. However, to obtain an administration out of court which will be quicker and more economical, it is necessary that these agencies

should be organized with the necessary accounting and administrative staffs that can be relied upon to act honestly in the interests of all the creditors. It is necessary, moreover, that complete agreement and cooperation exist among all the creditors on the terms of the settlement and liquidation and on the payment of administration expenses. Finally, it is necessary that there be no fraud on the part of the bankrupt, no preference payments to creditors, or no other irregular acts by any party to the case, that would require legal action for recovery, restitution, or settlement. The Irving Trust has received from these agencies many cases which they started but failed to settle because of the illegal or fraudulent act, or because of lack of agreement among the parties.

Another reason for this trend for settlement of cases out of court lies in a reversal in the incentive under the new system. As pointed out above, the remunerative fees and allowances paid to those who initiated bankruptcy cases encouraged an abuse of the proceedings. Not only does this incentive to petition a company into receivership no longer exist, but the self-interest of the agencies and of its staff, attorneys, appraisers, auctioneers, and other associated parties requires that the company shall not be thus petitioned.

Undoubtedly a great many cases will continue to be settled out of court through these associations and agencies. Where the organization is equipped to conduct an efficient and honest administration, a saving of time and money will accrue to the creditors. But only a very few meet this high standard.

The limitations of this mode of settlement must be recognized. In many cases a quicker and cheaper liquidation will be found an inferior one. Investigations may be neglected, preferential or fraudulent payments may remain concealed, assets may be sacrificed unnecessarily, or unfair compositions may be negotiated. It is believed that business men will discover through comparisons with the standing receiver those associations and agencies which are not organized for efficient, economical and honest administration, which are fostering their self-interests at the expense of the creditors, and which are encouraging out-of-court settlements to avoid court supervision and to cover up illegal transactions.

V. Conclusion

The administration in bankruptcy proceedings has been greatly improved since the appointment of the Irving Trust Company in January, 1929. The system has potentialities for great success, and the experience of the past two years has resulted in an admirable record. The Donovan Report, in its investigation only a year after the appointment, stated:

> The trust company experiment in this District has so far been successful. Efficient, skillful and responsible administration has been secured to an extent never before realized.

Many problems, it is true, both of a legal and commercial nature have yet to be faced and solved. It still is an experiment—an experiment for the Irving Trust Company, for the Court of the Southern District, and for this type of solution for the complicated bankruptcy problem. Undoubtedly, the influx of business in the present depression is subjecting the administration to a severe acid test.

RESEARCH EXPENDITURES AND THEIR EFFECT ON THE GENERAL ELECTRIC COMPANY

By DAVID GRAHAM

AT the present time, there are more than 1,000 firms in the United States which are operating research laboratories as integral parts of their plants. According to some estimates,[1] American business is spending more than $200,000,000 a year on research, $70,000,000 through the government and $130,000,000 through commercial firms. Large corporations, such as the General Electric Company, the United States Steel Corporation, General Motors, the Western Electric Company, and the American Telephone and Telegraph Company, spend millions of dollars a year and employ thousands of scientists, engineers, statisticians, and analysts in research work. The American Telephone and Telegraph Company, for example, spends roughly $15,000,000 a year and employs about 4,000 persons in its research division, the Bell laboratories.[1]

This article attempts to give the reader an understanding of the importance of research and developmental work in the electrical equipment industry by examining how expenditures for research and development are controlled in the industry, and what results have been obtained from these expenditures. In the electrical equipment industry, far-seeing managements have followed the policy of continually increasing the strength of their research staffs and providing the latter with better facilities and with increased financial resources. Three of the largest concerns in this industry—the General Electric Company, the Westinghouse Electric and Manufacturing Company, and the American Telephone and Telegraph Company are spending about one-fifth of the total amount spent for research in the United States.[2] Since, however, the vital importance of scientific research and development in the industry has nowhere been more clearly recognized than by the leaders of the General Electric Company, the discussion will be confined mainly to the policies of that company.

General Electric Company's Research Policy

The outstanding characteristic of the General Electric Company's policy is the attention which is given to originating new products to be manufactured and supplied to the public. In addition to executives, salesmen, and manual workers, its organization is made up of scientists, research and designing engineers, and inventors—men who contribute directly to the development of apparatus and devices for the generation, distribution, control and use of electrical energy. The record of technological advances made by the research workers of this company constitutes one of the most fascinating chapters in the history of American

[1] *Economic Control of Engineering and Manufacturing*," p. 300, F. L. Eidmann, McGraw-Hill (1931).

[2] M. Holland, Director, Division of Engineering and Industrial Research, National Research Council, *Mechanical Engineering*, Vol. 48, No. 2.

business. Their discoveries have not only transformed methods and products throughout the electrical industry, but have exerted a profound influence upon many phases of modern life itself.

In common with many of the leading American industrial corporations, the General Electric Company has been bold in entering new fields. It took chances and made mistakes; it sustained losses. Millions were expended, for example, upon the development and manufacture of steam turbines before any profit was derived from their sale. In many cases, large outlays were made without any gain except that represented by experience.

Treatment of Developmental Costs

It is clearly important, however, to control research and developmental costs and to segregate them in order that they may be as rapidly liquidated as the market will permit. To achieve this purpose, each developmental job is supported by an appropriation and the results expected from its prosecution are carefully weighed. Appropriations for developmental jobs in reality constitute a series of budgets. When an appropriation is exhausted, an additional sum is granted only if a survey indicates that continuance of the work is warranted.[3]

All expenditures made for the development of a given product are accumulated until such time as that product is ready for sale. At that time, an estimate of its potential sales at various price levels is made and a selling price chosen which, if the expected sales volume is realized, will yield sufficient profits to insure liquidation of the developmental expense within a definite period decided upon in advance.

In some cases, the actual sales are greater than the estimated sales, in other cases they are less, so that the rate of liquidation of developmental expenses varies with different articles. The total unliquidated developmental expense—always a large sum—is treated as a contingent asset. When, however, through lack of sales of the article to which it is applied, any portion of the developmental expense cannot be liquidated within the period decided upon, such portion is written off.

The company's aim in following this policy is threefold: to make each article, as it becomes salable, carry the cost of its development; to introduce its new products at prices which will encourage a large volume of sales and thereby enable developmental costs to be liquidated rapidly and the market for the new product to be occupied quickly; and finally, to segregate and write off any outlays for developmental work which were unfruitful.

This clear-cut treatment of developmental cost has enabled the General Electric Company to carry on its pioneering work with a large measure of safety, and with effectiveness. It has hastened the development of the electrical industry, inasmuch as it has tended to keep prices consistent, stable and equitable.

The conservative policy[4] of the company in valuing its present plants, equipment, and buildings, which on December 31, 1930, had cost about $200,000,000, at less than $50,000,000 is often commented upon by analysts of the company's affairs. It is not generally appreciated, however, that the company has spent since its organization more than $200,000,000 upon developmental and research work upon

[3] *Forty Years with General Electric*, John T. Broderick, Fort Orange Press (1929).

[4] Annual Report of General Electric Company (1930).

which no balance-sheet valuation is placed.

It is instructive to inquire how this enormous expenditure on research and developmental work has brought about a compensatory increase in profits.

One hundred years ago, industrial supremacy[5] was largely a matter of the control of raw materials. Within the last twenty-five years, however, the factor of research has considerably changed the foundation of the industrial structure. The leading industrial corporations apparently recognize clearly that the mere possession of physical property is no longer a guarantee of success, but that the profits of the future will depend upon products, processes and methods; that those companies which produce distinctly new items and develop processes by which present products can be made at less cost will succeed; and that those which fail to keep abreast of the times in industrial technology will fail. Since successful competition of research and developmental work, from a commercial point of view, usually results in new ideas being crystallized and protected in the form of patents, the influence of patents on the electrical equipment industry and more especially upon the business of the General Electric Company will now be examined.

Patents and the Evolution of the Industry

At first the electrical equipment industry consisted of small producing units. Competition was intense and patent litigation unceasing. Inventions which would greatly improve the apparatus of one company were often covered by patents of a competing company. The leading interests in the industry now turned to consolidation as a solution of some of these difficulties—with the result that two dominant concerns emerged which still provide constructive leadership for the industry.

The large companies have taken minority stock interests in many small electrical equipment concerns and have thereby secured representation on the boards of directors of the companies. This representation is concerned only with questions of policy and the managements are distinct. By working in cooperation, distribution expenses are reduced and during business depressions the problem of survival is placed squarely up to each unit. Faced with direct losses, the units function more efficiently than if they were merely departments in a large corporation.

There is clearly a limit beyond which consolidation or control through minority stock interests cannot be carried without violating the provisions of the anti-trust laws. To promote the best interests of the electrical equipment industry as a whole, therefore, working agreements were entered into by the large companies. These cross-licensing agreements were based upon patent interchanges, supported and guaranteed by mutual interest. The small competitive manufacturers were now permitted to use the patents of the large companies in return for the payment of reasonable royalties.

Without this pooling of patents and rights, it is probable that no one manufacturer could have obtained all the necessary licenses to permit the production of the most efficient equipment possible at any given stage of scientific development. Even if the necessary licenses had been obtained, the aggregate cost of royalty payments would almost certainly have been so high that the engineering progress of the electrical equipment industry would

[5] Holland, Maurice, *Mechanical Engineering*, Vol. 48, No. 2.

have been seriously retarded, the price of its products raised, and the growth of the industry throttled.

The huge patent pool whereby the General Electric Company, the American Telephone and Telegraph Company, the Westinghouse Electric and Manufacturing Company, the Radio Corporation of America, the United Fruit Company and others are jointly exploiting their radio patents in the domestic market is well-known. The world-wide community of interest created by patent agreements in the electrical equipment industry—particularly by those of the General Electric Company—is less frequently understood.

Importance of Patent Control in Foreign Relations

The importance of patent control in the electrical equipment industry can be readily understood when it is realized that the industry is continually renewing its youth. Its growth and development is still based, to a considerable extent, upon the exploitation of patents covering apparatus or methods of manufacture developed by research departments of various manufacturing concerns. American manufacturers possess many patents which are protected by law both at home and abroad. They have, in addition, designing experience and manufacturing technique that foreign companies wish to acquire. Foreign manufacturers likewise have patents, similarly protected, as well as valuable experience.

Early attempts of American manufacturers of electrical equipment to exploit their patents and products in foreign countries took the form of developing affiliated manufacturing and selling connections in foreign countries. Similar attempts to capture business in the American market were made by foreign companies. Direct competitive efforts of this kind have apparently never been successful to any great extent. Prior to the formation of the General Electric Company in 1892, the International Thomson-Houston Company attempted to sell the products of the Thomson-Houston Electric Company through salesmen and agents, but the attempt did not meet with much success.

The desire of American manufacturers to obtain patent rights, manufacturing experience, and designs from foreign companies was paralleled by similar desires of foreign manufacturers to use the results of American experience. Both parties wished to protect their respective patent interests in foreign countries to the greatest extent, and to further as far as possible sales of articles of domestic manufacture abroad. These factors, therefore, have led to contracts between American and foreign companies which, among other things, provide for the exchange of patent rights and technical information.

The advantages accruing from these agreements are very real. The International General Electric Company, for example, could not obtain such strong patent protection abroad as it could in America. Not only must the soliciting of patents be done at too long a range, but in most of the countries not much attention is paid to patents or to their enforcement—if the patents are held by persons outside the country. There is a prejudice against foreign-held patents and against their enforcement in almost every country, which prejudice is necessarily reflected in the courts. It is very difficult for an American even to attempt to enforce his patents efficiently. Furthermore, in the foreign industrial countries, there is a strong sentiment against foreign-made products offered in competition with do-

mestic products.[6] This sentiment is reflected in the laws of most of the countries which require that patents, in order to remain valid, shall be "worked' in the countries issuing the patents.

The patent situation is entirely changed, however, if the patenting of the inventions and the enforcement of the patents are in the hands of local manufacturers in foreign countries. If the foreign manufacturer imports the American-made products to supplement those of his own manufacture and himself markets the products along with his own—thus putting his stamp of approval on them—the American-made products can be sold readily.

At present there are many sizes and kinds of electrical products which foreign factories are not equipped to manufacture. Large additional investment would be required to provide adequate manufacturing facilities. Foreign manufacturers are in some cases unable to make such additional investment; in some cases they are unwilling to do so since the rapid change in the type of electrical apparatus demanded might soon make extensions of facilities out of date. Due, therefore, to the constant development of the electrical industry which is being carried on in America, there are many sizes and classes of products which, so long as progress is pushed most rapidly by American manufacturers, may reasonably be expected to be purchased from them in continuing large quantities.

The General Electric and Westinghouse companies have done most in America in developing and acquiring patents and experience which would be of value to foreign manufacturers, and are therefore in a strong bargaining position. In general, they have confined their exchanges of patent rights and technical information to the largest manufacturing interest in each foreign country.

Agreements with Foreign Manufacturers

Since 1919, the International General Electric Company has entered into agreements with about thirty foreign electrical equipment manufacturers.[7] Each of these contracts grants to the respective foreign company the use of General Electric patents and designing and manufacturing experience for specified territory in exchange for a similar grant by the foreign company to the General Electric Company.

Typically in these agreements, world markets are separated into three divisions: "exclusive territory," "nonexclusive territory," and "excluded territory." In the "exclusive territory" the two companies agree neither to compete nor to grant rights to competing companies; in the "nonexclusive territory" each company may compete directly in the sale of goods or each may grant rights to other companies in terms generally indicated in the agreements; in the "excluded territory" neither grants any rights to the other. The "excluded territory," and in some cases the "nonexclusive territory," is generally made up of countries in which one or the other or both parties have granted rights to other companies. A typical example will perhaps serve to clarify the picture.

The International General Electric Company has agreements with three German companies, two dealing with lamps only, and the other with electrical machinery and apparatus concerning the generation, transmission, distribution, conversion, and utiliza-

[6] Federal Trade Commission (Document No. 46) 1928.

[7] Annual Report of International General Electric Company (1929).

tion of electric energy, including turbines and prime-movers. The broader agreement covering prime-movers and electrical equipment (other than lamps and radio) is with the Allgemeine Elektricitaets-Gesellschaft. It originated on January 2, 1922, and continues to December 31, 1941, and thereafter unless terminated by not less than three years' notice by either party. In this contract, the General Electric Company reserves as its "exclusive territory" the North American Continent, Cuba, the West Indies, and the United States possessions, colonies, and protectorates, and grants as the "exclusive territory" of the Allgemeine Company—Germany, Denmark, Norway, Poland, Austria, Hungary, Czechoslovakia, Sweden, Finland, Memel, and Danzig. Until such time as the two parties shall agree otherwise, Estonia, Latvia, and Lithuania, Belgium, Luxemburg, France, Greece, Portugal, Spain, and their respective colonies are "excluded territory." The remainder of the world is described as "nonexclusive territory."

The rights granted cover not only the use of patents and mutual recognition of territorial division, but also the training of representatives of the foreign companies in factory methods and the furnishing of information approaching "trade secrets." As a leader in the electrical equipment industry, the General Electric Company has been able to obtain from foreign companies cash payments constituting charges for service and information as well as royalties for the use of patents. Such payments usually take the form of percentages of the foreign company's sales.

Another important feature of these contracts is that each party agrees to act as the exclusive agent of the other for noncompetitive goods in its respective "exclusive territory," and likewise accepts a nonexclusive agency in "nonexclusive territory" named in the contract. In accepting such agency the foreign company agrees to act as agent for no other company, and the General Electric Company agrees not to sell for use in, or export to, the foreign company's exclusive territory without the latter's consent. Some of the agreements provide further that, in exercising its right to sell in "nonexclusive territory" the foreign company shall sell at prices not more favorable to the purchaser than those of the General Electric Company.

To secure the close relationship necessary to guard its interests against misuse of the intimate information given concerning manufacturing methods and trade secrets for nonpatented as well as for patented articles, and also to insure adequate performance of foreign-agency features of the agreements, the General Electric Company has taken a considerable financial interest in certain foreign electrical equipment companies. Situations have arisen, for example, in which a manufacturer, wishing to withhold the use of a valuable patent from the international group to which he belongs, has formed a subsidiary company to announce a valuable discovery and to take out patents covering it. The subsidiary company's affairs do not, of course, fall under the international agreements. By having a minority interest in foreign companies, and representation on their boards of directors, the General Electric Company has assured itself of a fair share in the profits arising from new developments introduced by them.

Since an essential feature of the contracts described above is the agreement that each company will not invade the domestic territory of the other, the

former assume considerable importance as factors tending to eliminate competition of large foreign companies in the United States markets.

Effect of Patent Agreements and Contracts on Competitive Conditions in the United States

The electrical equipment industry in the United States presents a peculiar condition in that the value of heavy power equipment produced by the General Electric Company and the Westinghouse Electric and Manufacturing Company amounts to about 75% of the total for the industry.[8] A somewhat similar condition of concentration prevails in the electrical industry in the principal industrial countries of Europe and in Japan. The companies are smaller, but the characteristic feature is that, at most, three or four interests dominate in each country.

With this concentration of manufacture in foreign countries, the General Electric Company and the Westinghouse Company can effectively control the whole situation by having one or two contracts in each country. Not only is direct foreign competition eliminated in the United States markets, but the possibility that other American manufacturers will obtain the right to use important foreign patents, trade secrets, and manufacturing information and experience is also forestalled to the extent that the contracts give exclusive rights in America to the two large companies. Any other American company desiring to use these patents is forced, therefore, to attempt to obtain such permission from its strongest competitors.

The only foreign competition that can enter the United States is that of companies not under contract with either the General Electric or Westinghouse interests. It is interesting to note that the only important effort in recent years to exploit patents in a broad way, otherwise than through the General Electric and Westinghouse Company, is that of the American Brown Boveri Corporation. The latter is acting under contract with the Brown Boveri interests of Switzerland which are not under contract with either of the two large American companies.

The possession of exclusive rights to use the patents and experience of the most important foreign companies places the two large American companies in a position to use, or withhold from use, patents or information acquired under the contracts. If a competitor attempts to manufacture without license, he can be stopped by patent infringement proceedings, even though the patent infringed may not be in actual use at all in the United States.

Thus, the General Electric Company and the Westinghouse Company have made their patent-exchange contracts a source of direct income in the form of royalties. In addition, by limiting to themselves, and to other companies acting as their licensees, the use of American rights under foreign patents and experience of the largest and strongest foreign manufacturers, the two large American companies have protected their own position in the domestic market.

Legal Aspects of Contracts with Foreign Manufacturers

Since the contracts between the General Electric Company and various foreign manufacturers of electrical equipment tend to restrict competition in the United States, the agreements may seem to conflict with the Sherman

[8] Federal Trade Commission (Document No. 46) 1928.

Law and the Clayton Act, which squarely prohibit contracts in restraint of trade even under the pretense of patent agreements.

The General Electric Company claims to possess property rights in patents and in designing and manufacturing experience approaching—if not constituting—trade secrets. These rights, it contends, may be legally exploited or disposed of by contract. The company also claims the legal right to acquire from foreign companies similar patent rights and trade secrets, to keep abreast of developments in the industry. The agency features, which are found in the contracts with foreign manufacturers, are held to constitute a legitimate means of furthering foreign trade in products of American manufacture.

It is claimed that foreign patents, trade secrets, and technical and manufacturing methods are species of property subject to sale or exchange with restrictions as to use, and that restrictions in the foreign contracts do not exceed what is essential for the protection of the parties. The General Electric Company claims that trade restrictions in furtherance of such contracts are not prejudicial to public interests in the United States, because it has contracts with leading companies only in a few of the principal countries in the world, leaving many manufacturers in the same countries with whom no such contractual relations exist. On these grounds, the General Electric Company has successfully maintained that its contracts with foreign manufacturers are legal.

Apart from the question of conflict with the antitrust laws, however, patents, secret processes and technical experience—while appearing to aim at monopoly—do not have this effect as used by the General Electric Company. They rather tend to integrate the whole technical research capacity of Europe, America and Japan into a compact body seeking to promote developments in the electrical field and to make them available to the whole civilized world. With patents held by numerous patentees in various countries, it is clearly apparent that the progress of the electrical equipment industry can be most effectively promoted through international cooperation. The mobilization of patents and rights in the hands of the leading electrical equipment manufacturers of the world tends to shorten the time-lag between fundamental research discoveries and their industrial application, since important new applications of electricity are made available to the leading industrial nations simultaneously. The international cooperation in the electrical equipment industry has undoubtedly been brought about by the application of sound, constructive thinking. In this respect, the leaders of the industry have set an example which might well be followed by other American industries.

Conclusions

The expenditures for research and developmental work made by the General Electric Company have resulted in the company's gaining:

1. Basic patents which give a complete monopoly of the manufacture and sale of some types of equipment and appliances, *e.g.*, tungsten lamps.
2. Patents which, while not of a basic character, give the company the advantage of an early start in exploiting the market for new types of equipment or appliances.
3. Cash payments from foreign companies variously described as "royalties," "service charges" or "retainers," which constitute charges for services and information as well as royalties for the use of patents.

4. The American rights to manufacturing information and patents developed by foreign manufacturers with whom the General Electric Company has patent exchange agreements.

5. Protection of the American market against the entrance of those foreign manufacturers with whom the company has patent agreements.

6. Outlets for General Electric products through foreign manufacturers who agree to act as exclusive agents for the company, and who can dispose of American goods and yet avoid the strong sentiment which exists in foreign industrial countries against imported products offered in competition with domestic products.

7. Assurance that foreign manufacturers of electrical equipment and appliances will not attempt to sell their products in certain "nonexclusive" territories at prices more favorable to the purchaser than those offered by the General Electric Company.

The ability of the General Electric Company to maintain the strategic position which it now occupies depends in large part upon its ability to retain its present leadership in developing new products. Strings of minor patents, trailing behind a powerful company which is pushing forward rapidly, may trip up competitors who attempt to approach too closely, but a single patent or group of patents will rarely allow a competitive situation to be controlled for a long period of time. The very necessity of the situation often leads competitors to develop improvements, so that what may be monopolized today may disappear tomorrow by reason of some outside improvement.

Given more prosperous conditions, it seems reasonable to expect an acceleration in the speed at which foreign manufacturers—and particularly those in the European countries—will originate new developments and applications of electricity. Such an occurrence will undoubtedly hasten the present trend of the General Electric Company's policy of establishing closer relations with foreign manufacturers, and seems likely to refute more and more clearly the suggestion that the United States can ever hope to operate successfully as an isolated economic unit in the industrial world of the future.

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